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The Zoological Section of the Nuzhatu-l-Qulûb.

(a Persian Compendium of Science, 1340 A. D.)

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INTRODUCTION.

I have been for some time past engaged in preparing an edition, with a translation and notes, of the text of the Zoological part of the *Nuzhatu-l-Qulûb* of ḤAMDULLÂH MUSTAUFÎ QAZWÎNÎ, a Persian Encyclopaedia of science, completed in A. D. 1339-40. This will shortly be published by the Royal Asiatic Society. In

the meantime, it may perhaps be permitted me to give some account of the work, and to explain the place of the *Nuzhat* in the history of Zoology.

In the case of most of the animals described, the medical uses of their several parts or organs are also given; and we are thus put in possession of a list of drugs of animal origin employed at this particular period, and of the diseases in which they were used; the fifth section of the present essay thus deals with medical practice in 14th century Persia.

I. THE AUTHOR.

The author of the present work, Ḥamdullâh b. Abî Bakr b. Ḥamd al-Mustaufî al-Qazwînî, was born about A. H. 680 (A.D. 1281-2). He professed to be of Arab origin, but his family had long been settled in Qazwîn. About 1311 he was appointed by the physician and historian Rashîdu-d-Dîn, the wazîr of Abû Sa'îd the Mongol Îl-Khân, to be superintendent of the finances of Qazwîn, Abhar, Zanjân and Ṭârumain. In the preface to the *Nuzhatu-l-Qulûb* he tells us that, following in the footsteps of his forefathers, he had devoted himself from his youth upwards to financial business, and had visited in the discharge of his duties Sulṭâniyyah, Tabrîz, Baghdâd, Iṣfahân, and other Muslim cities, neglecting no opportunities of adding to his store of knowledge by the reading of books and the conversation of the learned.

The first of his works to be published was the *Târîkh-i-Guzîda* ('Select History'), a universal history, compiled from sources which he mentions, and completed A. H. 730 (A. D. 1330). This has been published by the Gibb Trustees in the form of a photographic reproduction of one of the MSS. It is described by Browne as being inferior to certain other histories of the early Mongols; it is however « a useful compendium of Persian and Muhammadan history, and contains a good deal of interesting matter, collected by the author from some two dozen earlier works in Arabic and Persian. »

The second of his works is the *Zafarnâma* ('Book of Victory'), a vast rhymed chronicle of Persian history, continuing Firdausî's great epic. This was begun when he was about forty, and occupied him fifteen years, but it was put aside when two-thirds completed in order to produce the *Târîkh-i-Guzîda*, and was finished five

years after that work, in A.H. 735. The *Nuzhatu-l-Qulûb* ('Hearts' Delight'), the third of his works, was completed in A.H. 740 (A.D. 1339-40).

There seems to be no record of the date of his death.

II. THE NUZHATU-L-QULÛB.

MUSTAUFÎ states in his preface to the *Nuzhatu-l-Qulûb* (I quote from RIEU's catalogue) that having obtained and perused the following four Arabic works, — *Ṣuwaru-l-Aqâlîm* by ABÛ ZIÂD AḤMAD B. SAHL AL BALKHÎ, *al-Tibyân* by AḤMAD B. ABÎ 'ABDILLÂH (which RIEU thinks may be the *Kitâbu-l-Buldân* of AḤMAD B. 'ABDILLÂH MUḤAMMAD AL-BARQÎ), *Masâliku-l-Mamâlik* by ABÛ-L-QÂSIM 'UBAIDULLÂH B. KHORDÂD KHURÂSÂNÎ, and *Jahân-Nâma*, the author of which is not named, — he made from them the present compilation, and enlarged it with additional matter derived from his personal knowledge and from a number of other works, of which he gives a list.

The *Nuzhatu-l-Qulûb* may be described as a kind of scientific encyclopaedia, or perhaps better as a scientific popular educator; it gives a conspectus of scientific knowledge, from astronomy to psychology and ethics. Its style, in general, is short, terse and homely, often of an almost notebooklike brevity, the very reverse of the high-flown artificial 'literary' idiom. An introductory section deals with the spheres, heavenly bodies, and elements, and then considers the 'inhabited quarter' of the earth, longitude and latitude, and the climates. The body of the work is divided into three maqâlas, the first treating of the mineral, vegetable, and animal kingdoms; the second of man, his bodily structure (anatomy), faculties and moral qualities; and the third of geography. An epilogue is devoted to wonders and curiosities, — those of Îrân and of the rest of the world.

The Bombay lithograph of the *Nuzhat* contains 372 pages, of which the section now under consideration occupies 38. The zoological portion of the work, that which is here discussed, is the third martaba of the First Maqâla. G. LE STRANGE has previously published the text and translation of the Third Maqâla (the geographical portion) and the Epilogue. The rest of the work has not yet been critically edited or translated.

III. THE ZOOLOGICAL PART OF THE NUZHAT.

The zoological part of the *Nuzhatu-l-Qulûb*, comprising 38 pp. of the Bombay lithograph, succeeds the mineralogical (16½ pp.) and botanical (36 pp.) portions.

Animals are classified as

(1) Of the Land; and these again as
  (a) Domestic
  (b) Wild Animals
  (c) Beasts of Prey
  (d) Poisonous Animals and Creeping Things
  (e) Animals certain of whose Members resemble Man
(2) Of the Sea
(3) Of the Air.

A separate paragraph is devoted to each animal, the paragraphs being arranged, in each of the several sections, in the alphabetical order of the Arabic names of the animals. In the case of the larger and better known animals the Arabic is followed by the Persian name; sometimes another Arabic name is given, and often also the Turkish and Mongolian equivalents; since Persia, at an earlier period under the rule of the Seljûq Turks, had when the *Nuzhat* was written passed under the domination of the Mongols. It is then stated whether the animal is allowed to be eaten; and the qualities of its flesh — hot or cold, dry or moist — are sometimes given. A short description of the animal follows, usually limited to a few selected features; and lastly there is given a list of the medical uses of the various parts or organs. Sometimes this medical part forms the larger portion of the account of the animal; occasionally the magical uses of certain organs are also given. The accounts of the smaller and less familiar animals are much shorter, sometimes hardly more than the name.

The total number of animals described is 228. The first division of Terrestrial Animals, the Domestic, contains 10 names, — Camel, Mule, Ox, Buffalo, Ass, Cat, Sheep, Horse, Goat, Malaṭ, the last a purely mythical beast. The second division, Wild Animals, with 40 names, is a very heterogeneous assemblage, consisting of the Jackal, Weasel, Hare, Ibex, Fox, Pig, Lizard, Elephant, etc., etc. The third division, Noxious Beasts of Prey, numbers 20 members, — the Lion, Tiger, Bear, Wolf, Hyena, Cheeta, Dog, Mad Dog, Leopard, etc. The fourth division, numbering

39, is also very heterogeneous; here come the Viper, Flea, Dragon, Serpent, Earthworms, Beetles, Silkworm, Weevil, Scorpion, Bugs, Spider, Ant, etc. The fifth division consists of 11 entirely mythical animals, such as the Asbsâr, with head like a horse and body like a man, and in addition with two wings. Aquatic Animals number only 25, but the Fish, of which 37 kinds are given, counts as only one; among the others are the Crocodile, Crab, Turtle, Frog, Leech, etc. The Animals of the Air, 83 in number, are mostly Birds, but some Insects are also included.

A few examples will illustrate the method of treatment and the general style of the work.

(I) THE CAT :—*Sinnaur*, *Gurba* (Pers.), is called *Hirr* by some of the Arabs, *Jatak* by the Turks, *Malghân* by the Mongols. It is a greedy animal, of various colours, and to eat it is unlawful, and to kill it forbidden. When angry, it becomes so enraged as to be beside itself; hence infidels used to bring up a devotee on the flesh of cats, so that he might overcome his antagonist. The cat is the enemy of the rat; and the elephant dreads the cat. In the *Mujmalu-t-Tawârîkh* it is said that the cat does not breed in China.

Those who apply its bile to their eyes become keen-sighted in the night; and half a drachm of it mixed with olive oil is beneficial to one with facial paralysis; and pounded up with cumin seed and salt it heals old wounds. The spleen of a black cat tied on a woman with excessive menstruation will check the flow, and until it is taken off the menses will not reappear. Its flesh boiled and used as a poultice to the gout allays the pain; and if eaten, magic will take no effect against the eater. If its blood is applied to tubercular leprosy, it will disappear. Its flesh, dried and rubbed up, and placed over the wound where a thorn or arrow-head has entered, will extract (the foreign body).

(II) THE APE :—*Qird*, *Kabî* (Pers.), called also *Buzîna* by the Persians, and *Bîḥan* by the Turks. It is a quick-witted animal, with pretty tricks, droll, capable of being taught many things, and with many human traits. *Its Properties* : Its eye carried about one brings sleeplessness; rubbed up and applied to the eye it cures corneal opacities and gives greater clearness of vision. Eating its flesh cures tubercular leprosy; and anyone who eats its blood becomes tongue-tied, and appears ugly in men's eyes. Its skin is made into sieves; all seed that is sown after being sifted through it is safe against pests.

(III) THE LION :— *Asad*, *Sher* (Pers.), is called by the Arabs *Żarghâm*, *Ghażanfar*, *Qaswarat*, *Laith*, and *Hizabr*, and by the Turks *Arslân*; and the Arabs call its whelp *Shibl*. He is the most powerful and terrible

and majestic of the beasts of prey; it is true the majesty of the tiger surpasses that of the lion, but some have asserted that the tiger is itself a species of lion. When the lion kills his prey he eats its heart, and some of its other parts, and leaves the rest, and does not return to his half-eaten meal; he does no injury to a menstruous woman; and any animal that approaches him with submission he neither pursues nor injures; he is jealous of the female. And these qualities are those of kings; therefore he is called the king of beasts. In spite of his majesty, he is continually attacked by fever; from other diseases he is freed by eating an ape. The lion dreads a white cock, and a peacock, and fire; he is an enemy of the elephant. From fear of ants he betakes himself to salt-pans, since if an ant gets into his paw he cannot free himself from it, and perishes. In the *Mujmalu-t-Tawârîkh* it is said that the lion does not propagate itself in Turkey.

Its Properties : Its brain allays tremors. Its bile makes a man brave and courageous, and cures epilepsy and ringworm of the scalp; applied to the eyes it cures them if bloodshot; as an ointment, it resolves tuberculous glands. Its fat is beneficial for piles, severe inflammations, and boils. If the fat of its eye along with oil of roses be rubbed on the face it will take on a formidable appearance; and it is useful in hemiplegia and paralysis. Its blood is beneficial in cancer. Sleeping on its skin takes away quartan fever, and piles; and when its skin is made into a drum, its sound will scatter the enemies' horses.

(IV) THE SCORPION :—*'Aqrab*, *Kazhdum* (Pers.), called by the Turks *jîyân*, is the most hideous and the most noxious of creeping things. It has eight legs, and its eyes are on its belly. Its young come forth from its back, and before coming forth eat the mother's internal organs. When it runs about, it stings with its tail whatever comes in contact with its head. If one is caught in a vessel and put into the oven till it is reduced to ashes, half a dâng of the ash taken internally will reduce the size of a stone in the bladder and then expel it; this ash too, mixed with oil, will cause the hair to fall out from any place where it is applied; and is also beneficial in long-standing fever and in palsies. The smoke from a scorpion will expel other scorpions from the house. Scorpions dried and rubbed up with vinegar, if applied on maculo-anaesthetic leprosy will effect a cure.

The 'eyes' on its belly are the eyelike openings of the book-lungs; the eyes are really on its head, but are inconspicuous.

(V) THE PARROT :—*Baigha*, *Tûtî* (Pers.), is mostly green. In the *'Ajâ'ibu-l-Makhlûqât* it says that there are yellow and red and white parrots. But its beak is always red; and its tongue is round, like a man's,

—hence it can pronounce words properly, and can be taught to talk. It never drinks water; if it does, it dies. It is forbidden to eat it. Eating its flesh brings eloquence, and increases the brightness of the eye, and gives strength of heart. Its bile taken internally makes the tongue heavy. If its blood be dried and rubbed up and scattered amongst a party of friends, they will fall out among themselves.

The above examples will be sufficient to show the general style of the work, and the general level of its contents. They may not induce the reader to rate the scientific acumen of the author very highly; yet scattered amongst much that is childish there are a number of happy descriptive touches. Of such the following are examples.

The giraffe is said to have « a neck like that of the camel, and a skin like that of the leopard, and four extremities like those of the cow; its forelegs are longer than its hindlegs, but in the books of the philosophers they say nothing as to the advantage of this. » The animal nature of the sponges is recognized; the sponge is « a marine organism, soft, with animal affinities. » The crab « has no head; its eyes are on its shoulders, and its mouth on its belly; it has eight legs, and goes sideways. » Sepia, the cuttlefish, « is of the shape of a Turcoman felt hat. When the fisherman tries to take it, so much ink comes out of its interior that the water around it becomes black; and whatever they dye with that water, the dye is permanent. »

There are however a number of very crude mistakes, which could not have withstood the test of even a cursory observation. Thus I cannot understand the statement that the elephant has no joints, except at the shoulder; « notwithstanding the bulk of its body, and that it has no joints except the shoulder, it moves actively. » There is a similar statement in the *Ǧâmi'u-l-Ḥikâyât* (v. post.), and in Damîrî (the female elephant « never brings forth in any but a standing posture, there being no joints in her legs »). When I went on tour on an elephant in India, the animal knelt for me to mount; and its tail being held out like a skipping-rope, I stepped onto this and thence climbed up over its quarters to the howdah on its back; this I take to be the traditional mode, and anyone who had ever seen elephants mounted thus must have seen the legs bent under the animal, and appreciated the fact that the animal has joints.

Again, the crow is white at hatching, and becomes black at first moult.

« When the young one is hatched, its down is white; its mother grieves, and abandons her young one; but God *(may He be exalted!)* gathers together before it large numbers of flies and gnats, and it eats of them, till it moults the white down and produces black feathers; then the mother draws near to the young one and takes it into her care again. »

The porcupine shoots out its quills.

« When an enemy comes on it, it shoots off some of the spines on its back at him, like arrows, and so keeps him off. »

The hyena is hermaphrodite; « it has both male and female organs, in the manner of an hermaphrodite, and every year the organs of one sex are excited. » The hare is « one year a female and one year a male, and the female menstruates in the manner of women. »

Finally a few examples may be given of the numerous mythical animals described, sometimes with many particulars, by our author.

Thsu the Shâdawâr.

« is a fierce carnivore. In the *'Ajâ'ibu-l-Makhlûqât* it says that it has two horns, each with twenty-one branches, all of which are hollow inside, and provided with a hole; when the wind blows on it it gives forth a sweet sound, and beasts and birds gather round and listen to the sound; and as it finds opportunity it seizes on one of them as a victim and devours it. And men take its horns as a present for kings, and they set them up where the wind blows, so that they may give out those sounds; and sometimes the sound it makes is so plaintive that it excites a sentiment of pity. »

As to the 'Arba : —

« In the *Jâmi'u-l-Hikâyât* it says that in the country of Nubia there is a kind of animal with a countenance like a man's, which has two wings and a long tail, and in the hot season uses the tail as an umbrella, like the peacock; and they associate with men and dance with them. »

Mermaids, or at any rate mermen, are recognized : —

« The water-man resembles the man of the land in everything, except

that he has a tail, and is smaller in body. When they appear in the sea the mariners rejoice, knowing that their appearance is the cause of calm waters. »

The Phoenix (Qaqnus) is said to be well known.

« It lives in India; it has a long beak, with many holes in it, and from every one there proceeds a different note. When it sings, no animal can pass by because of the sweetness of its song. And it does not beget young; at the time of death male and female collect a large quantity of firewood, and interlink their beaks together and flap their wings; from the clash of their wings the wood catches fire, and blazes, and the two phoenixes are consumed; rain falls on their ashes, and a worm appears therein, and eats of the ashes, and grows to a large size and becomes another phoenix. *And praise be to Him! how great is His glory in the creation of the animals!* They say that they invented the organ in imitation of the song of this bird. »

IV. THE PLACE OF THE NUZHAT IN THE HISTORY OF ZOOLOGY.

1. — *Previous Works on Zoology.*

Arabic works on Natural History are few, and Persian works are non-existent, before the time of MUSTAUFÎ. There seems indeed to be no systematic zoological treatise before the *Nuzhat* except that of JÂḤIẒ (d. 255/869), called *Kitâb al-Ḥayâwân* (« Book of Beasts »), which however (like that of AD-DAMÎRÎ later) is for the most part of philological and literary interest « giving more the grammatical structure and meanings of the names of animals than their descriptions » (JAYAKAR). It contains, as CARRA DE VAUX informs us, anecdotes, reflections and literary recollections suggested by the animals treated of, and also many chapters which have no concern with animals.

There were however also in existence a number of special treatises; the origin of one group of these is explained by GEYER (*Sitzungsber. Wien. Akad. Wiss., Phil.-Hist. Classe*, vol. 115, 1887). The animals of the desert play a great part in ancient Arabic poetry, and many names and « epitheta ornantia » were given to them; these were zealously gathered together by the philologists, whose activity resulted in the production of works with the title *Kitâb al-Wuḥush* (« Book of Beasts ») or *K. Asmâ al-wuḥûsh* (« Book of the Names of Beasts »). GEYER gives a list of eleven

such authors, but the book of AL-AṢMÂ'Î (b. 739, d. 831 A.D.) is, according to GEYER, the only one which is known to exist in Europe. The work is not a long one; it is reproduced by GEYER, and occupies 440 lines, about 22 pages of the journal. The animals treated of are the ass, ox, antelope, mountain goat, ostrich, lion, wolf, hyena, fox, and hare; verses are given from the poets illustrating the use of the names adduced.

Another group of treatises consists of works devoted to a special animal, — in particular to the horse. AL-AṢMÂ'Î here again furnishes us with an example; his *Kitâb al-Khail* has been edited and annotated by HAFFNER (*Sitzungsber. Wien. Akad. Wiss., Phil.-Hist. Classe*, vol. 132, 1895); it occupies 468 lines, or 24 printed pages. The names given to the horse are recounted, here again with examples of their use from the poets, and this is followed by a description of their desirable and undesirable qualities, their colours, etc. According to JAYAKAR, ABÛ 'UBAIDA (b. 728, d. 825 A.D.) claimed to have composed a work in fifty volumes on the horse. AL-AṢMÂ'Î wrote, besides his work on the horse, treatises on the camel and on the sheep.

2. — *Zoological Sources of the Nuzhat.*

MUSTAUFÎ does not pretend to be more than a compiler; but in view of the scarcity of zoological works existing in his day it is obvious that the greater part of his information cannot have come from them, but must have been derived from elsewhere. He gives us in his preface a list of his authorities (v. antea, p. 287), which mostly can have little to do with Zoology, however useful they may have been for the other parts of the *Nuzhat*. More information can be got from his references to authorities in the zoological portion itself; these I have collected together, as follows :

By far the most frequently quoted work is the *'Ajâ'ibu-l-Makhlûqât* of ZAKARÎYÂ B. MUḤAMMAD B. MAḤMÛD AL-QAZWÎNÎ, b. 1203, d. 1283 A.D., which is referred to 31 times. Next in frequency comes the *Jâmi'u-l-Ḥikâyât* of MUḤAMMAD 'AUFÎ (completed in A.D. 1232-3), quoted 13 times; no other authority is quoted more than three times. The *Mujmalu-t-Tawârîkh* (a work which I have been unable to trace), the *Qiṣaṣu-l-Anbîyâ* (probably *ath-Tha'labî's*), and the *Târîkh-i-Maghrib* of NAṢÎRU-D-DÎN ṬÛSÎ, are quoted three times. The *Maṣâbîḥ*, a book of

traditions by AL-BAGHAWÎ, and the *Ṣuwaru-l-Aqâlîm*, by AL-BALKHÎ, twice. The *Târîkh-i-Banâkatî* (or *Fanâkatî*) of ABÛ SULAIMÂN DÂ'ÛD of Banâkat (the modern Tâshkand), the *Tanṣîkh-Nâma* (probably the *Tansûq-Nâma* of NAṢÎRU-D-DÎN ṬÛSÎ), the *Ṣiḥâḥ* of JAUHARÎ, the works (*Taṣânîf*) of ABÛ RAIHÂN (or AL-BÎRÛNÎ), the *Minhâj* (probably the *Minhâju-t-Ṭâlibîn*, a manual of jurisprudence by AN-NAWAWÎ), the *Masâliku-l-Mamâlik* of ABÛ-L-QÂṢIM 'UBAIDULLÂH B. KHORDÂD KHURÂSÂNÎ, the *Sîratu-n-Nabî* (presumably, according to BROWNE, the *Life of* MUḤAMMAD by B. HISHÂM), the *Kalîla* (i.e., the *Kalîla wa Dimna* of NAṢRULLÂH B. 'ABDU-L-ḤAMÎD), the *Tafsîr-i-Kulînî* (or *Kalbî*) (which I have not traced), the *Rabî'u-l-Abrâr* of ZAMAKHSHARÎ, the *Târîkh-i-Ṭarîr* (probably the great history of MUḤAMMAD JARÎR AṬ-ṬABARÎ), and the *Shaikhu-r-Rîs* (whom I have not traced), once each.

The above works are directly quoted in the zoological part itself as authorities for certain statements ; and since the *'Ajâ'ibu-l-Makhlûqât* and the *Ṭâmî'u-l-Hikâyât* are referred to with some frequency, we may consider a little further MUSTAUFÎ's indebtedness to these.

3. — *The 'Ajâ'ibu-l-Makhlûqât.*

The *'Ajâ'ibu-l-Makhlûqât*, a cosmography by ZAKARÎYÂ B. MUḤAMMAD B. MAḤMÛD AL-KAMMÛNÎ AL-QAZWÎNÎ, was written in Arabic in 1263 A.D., and a second enlarged edition was put forth in 1275. It was later translated into Persian. The Arabic text has been edited by WUSTENFELD, and a portion (going as far as metals, but stopping short of vegetables, animals, and man) has been translated by ETHÉ.

I have examined the MS. (Add. 16739) of the Persian translation in the British Museum Library. The zoological part takes up 57 folios or 114 pages; it follows the sections on Man and the Jinn, and describes 130 animals under the heads of (I) Beasts of Burden, (II) Cattle, (III) Beasts of Prey, (IV) Flying Animals, (V) Reptiles and Insects, as well as, shortly, some animals of strange shape, and some compound animals, made up of two of different kinds.

As an illustration of the style and matter of the work, the following examples will serve : —

(I) *'Aqrab*, the Scorpion, called *Kazhdum* in Persian, is the most noxious of reptiles, and when it has struck anyone, it immediately makes off. It has eight legs, and its eyes are on its belly. It comes out of its hole in the first part of the night, (when) it is lively, and strikes everything it sees. Whenever it sees a snake, it strikes it; if the snake can seize it, it eats it and is safe, but if the scorpion gets away, the snake dies. And a physician heard a man say to another. 'Thou art like a scorpion, — thou injurest, and benefitest not'; he answered, 'I lay no such false charge against thee.' It benefits in many ways; if its belly be rubbed up and laid on the place it has stung, the pain will subside immediately; and if a scorpion be placed in a jar and its top closed, and placed in a hollow oven till the scorpion within the jar is reduced to ashes, and one dânaq of that be given to one with stone in the bladder, the stone will be broken up. And if a scorpion strikes anyone with an old-standing fever, the fever will be cured; and if it strikes one with hemiplegia, the palsy will pass off. And if a scorpion be burnt inside a house, no scorpion will remain therein; and if a large black scorpion be taken and dried and rubbed up, and anointed with vinegar on (maculo-anaesthetic) leprosy, the leprosy will be cured. And if a woman who is used to bring forth many children carries about with her a scorpion in a piece of cloth, she will have no more children thereafter. And if its ashes be mixed with oil and used as an ointment, they will cause the hair to grow.

The above may be compared with the corresponding extract given above from the *Nuzhat*.

(II) *Waṭwâṭ*, the Mountain Swallow (? Swift), called *Bâlwâya* in Persian, is a well known bird. BALNYÂS (? = PLINIUS) says that if the waṭwâṭ drowns in water, everyone who drinks of that water will sleep for a month; and if a man's hair be tied round the neck of a waṭwâṭ, which is then set free, the man will never sleep till the bird dies (or) till the hair is taken from its neck. *On the Properties of its Parts*:— If its head be placed in the stuffing of a pillow, whoso lays his head on that pillow will sleep. If its brain be applied to the eye along with honey, it will be beneficial in cataract; and if it be cooked with oil of roses and used as an ointment for sciatica, it will be useful

(III) *Baghl*, the Mule, is born of the horse and the ass. If the stallion is the horse, the mule is more like the ass; and if the stallion is the ass, the mule is more like the horse. One of the wonders is that in every part the mule is intermediate between horse and ass, even to its voice, gait, etc., — all intermediate between horse and ass. They say the mule lives to a great age, because it rarely covers the female, and

she does not produce young; some say that the young do not become enclosed in her belly, and some that the passage is narrow and the young cannot pass out by it, — (if they do) the mother dies. *On the Properties of its various Parts :* — If its earwax be added to a woman's food, she will not become pregnant. If its brain be added to anyone's food, his senses fade away and he becomes as if asleep. If a woman eats its heart she will never become pregnant. If its hoof be burnt, and a woman eats the ashes, she will never conceive. If the ashes be mixed with oil of myrtle, and a bald head be anointed with it, it will cause hair to grow. If its testicle be dried and wrapped in a silken cloth and bound on a beast of burden, it will not tire in travelling. If a pregnant woman tastes its urine she will bring forth a dead child. If one smells a heap of mule's dung (when suffering from a cold), and spits on it, and then casts it into the road, whoever puts his foot on it will have the cold transferred to him.

The manner of the articles is similar to that of the *Nuzhat*, and the matter is not dissimilar. MUSTAUFÎ however refers directly to the *'Ajâ'ibu-l-Makhlûqât* principally as his source for the fabulous animals (in the Section « Animals certain of whose Members resemble Man », and elsewhere), or as his authority for curious or mythical statements about more ordinary animals, — not for the general run of his matter, for which indeed he does not as a rule mention any source.

4. — *The Jâmi'u-l-Hikâyât.*

The *Jâmi'u-l-Ḥikâyât wa Lawâmi'u-r-Riwâyât*, the second great authority quoted by MUSTAUFÎ, is, as RIEU says, a large collection of anecdotes, detached narratives, and miscellaneous notices, either culled from historical works or derived from oral information. It was written by NÛRU-D-DÎN MUḤAMMAD 'AUFÎ, author also of the *Lubâbu-l-Albâb*. An outline of his life is given in RIEU's catalogue, and also by BROWNE; he is mentioned as one of the eminent writers who lived in Delhi during the reign of ILTATMISH (A. H. 607-633). The *Jâmi'u-l-Ḥikâyât* has not yet been edited or translated.

I have examined the MSS. of this work numbered Pers. Add. 16862, Or. 2676, and Or. 236 in the British Museum Library. These are ponderous tomes, the mere transcription of which must have been an immense labour, to say nothing of the original

composition. The work is divided into four parts, each of which is subdivided into 25 chapters. The zoological portion is contained in chapters 21-24 of the fourth part, and in Pers. Add. 16862 takes up twelve and a half folios — 25 pages. The names of the chapters are

The Temperaments of Animals
Wild Beasts
Strange Animals
Curious Birds.

There is thus no attempt at any logical division of the subject; and the several articles are rather collections of stories, with accounts of the useful properties of the animals, than attempts at a systematic zoology. Curiously, the last chapter of all, no. 25 of the fourth part, which follows on the zoological section, is on « The Facetiousness of the Great. »

An idea of the style and contents of the *Jâmi'u-l-Ḥikâyât* may be gained from the following extracts.

Rukh :—They say the rukh is an animal like the camel, and has two humps; and it has front teeth, and in all its limbs and parts is poisonous; and no animal escapes from it. From its blood, spittle, dung, etc., all is deadly poison. Whatever comes into sight becomes its prey, since it is as quick as the wind in running, and can catch up all animals. And if anyone flies from it to the top of a high tree, or onto an embankment where it cannot come, it comes and stands below, and lashes its tail, and urinates, throwing it upwards; and if a drop of it falls on a man, he dies. And for this reason the sages of India have likened the rook at chess to it, since the rook at chess overcomes all other pieces.

I omit one or two sentences in the above passage, which are corrupt in all three MSS. The name of this animal is also the name of the rook at chess in Persian (from which our own name comes).

The *Elephant* is the noblest of animals, and has a friendliness for man, and hence is capable of education and instruction. And his legs cannot be bent, because they are constructed of one bone and have no knee-joint. And he is the longest lived of animals, his age being 100 years, and it may reach 200, or he may live for 300 years. And in the *Ṭabâ'i' Ḥaiwânât* one relates that he had heard from trusty friends that an elephant lived for 400 years. His tongue is small and turned the wrong way round, and the tip of his tongue points inwards, con-

trary to the tongue of man. Therefore the sages of India have said that if the tongue of the elephant were straight it would certainly have been able to talk. They said so because the elephant is extremely intelligent, and has strong powers of perception which are receptive of education.

The account is not dissimilar from that in the *Nuzhat*. One of the stories told of the elephant is the following : —

The author states that he heard from Saiyid al-Ḥukamâ Shamsu-d-Dîn Qaisar *(may God lengthen his days !)* that when he was at Naharwâla there was an elephant there belonging to the Raja of Naharwâla; and the keeper used to take him daily to the water, passing in the bâzâr by the shop of a tailor; and the elephant used to put his trunk into the shop and molest the tailor's apprentices; so that the tailor one day thrust his needle into the elephant's trunk to repel him. The elephant withdrew his trunk and went off; and when he had drunk he filled his trunk with water, which he kept there and did not expel. When he arrived at the tailor's shop on his return, he opened his trunk and discharged the water, and ruined all the man's stuffs.

There are considerable verbal differences between the versions of this story in the MSS., and the above translation is not strictly literal. There is or was a Naharwâla in the Gujrât District of the Punjâb; MUḤAMMAD B. ABÎ BAKR 'UMAR B. ABÎ BAKR B. MUḤAMMAD AL-MAKHZÛMÎ AD-DAMÂMÎNÎ AL-MÂLIKÎ, who wrote an abridgement of AD-DAMÎRÎ's work, called 'Ainu-l- Ḥayât (« The Fountain of Life »), finished it there in 823 A.H.

I do not know whether the story of the elephant and the tailor will recall to any readers of this page, as it did to me, the days of childhood; if so, they will perhaps sympathize with my pleasure when, after it had slept in my memory for more years than I feel inclined to specify, I thus happened by chance on its original source, in an ancient Persian MS. in the Oriental Library of the British Museum.

5. — *Other possible Sources.*

A copious list of sources can be collected (v. p. 294 above) from the text of the zoological portion of the *Nuzhat*; but from all of these put together, except the *'Ajâ'ibu-l-Makhlûqât* and the *Jâmi'u-l-Ḥikâyât*, MUSTAUFÎ can have derived very little of his matter. At the end of the zoological part however, he says, « And

in this section everything that I have not transcribed from other books is taken from the account given in the *'Ajâ'ibu-l-Makhlûqât* and the *Jâmi'u-l-Ḥikâyât*. »

But from the much smaller number of animals described in these two works (apart from the fact of the differences in the accounts of the same animal) there seems to be a considerable element of the zoological section still unaccounted for. This residue certainly does not depend on the author's own observations, and hence must have been gathered either from other and unacknowledged sources, or from common knowledge and oral tradition. Since MUSTAUFÎ seems to have been on the whole rather proud than otherwise of his list of authorities (after the manner of some more modern writers), we are perhaps justified in assuming that a fair proportion of his matter has the latter origin.

Some of this traditional matter is no doubt ancient, and to be found in Greek and Roman authors. Thus the statement in the *Nuzhat*, that if the tongue of a frog be laid on the heart of a sleeping woman she will tell whatever she may have done, is found in PLINY, quoted from DEMOCRITUS.

« DEMOCRITUS says, that if one tears out the tongue from a living frog in such a way that no other part remains attached to it, and places the frog again in the water, and lays the tongue on the heart of a sleeping woman, she will answer truly to any question. »

It is however not part of my present plan to follow out the animal lore which has descended through the ages in this way; those who undertake the work will find much material for comparison ready to their hand in the compilations of H. O. LENZ, *Zoologie der alten Griechen und Römer*, Gotha, 1856 (annotated extracts from classical and post-classical authors), from which I have quoted the above passage from PLINY, and of L. LEWYSOHN, *Die Zoologie des Talmuds*, Frankfort am Main, 1858.

6. — *Comparison with the* PHYSIOLOGUS.

I will however permit myself briefly to note a few passages from the « *Physiologus* », the zoological textbook of Christianity in mediaeval times, a compilation which exists in many forms and perhaps originated in Alexandria in the second or third century A.D., which was quoted from the earliest fathers of

the church onwards, and was in use, for edification or instruction, to the close of the middle ages. I have used the recent translation of CARLILL in *The Epic of the Beast*, Routledge, London, n.d. (? 1926) (Broadway Translations).

In the *Nuzhat*, the leopard sleeps three days after feeding; in the *Physiologus*, the panther awakes on the third day after feeding.

In the *Nuzhat*, the hyaena is hermaphrodite, and every year the organs of one sex are excited; in the *Physiologus*, it is man-woman, now male now female.

In the *Physiologus* we once more meet with the statement that the elephant's legs have no joints,—« when he falls down, he is unable to rise again, for his legs have no joints. » As to the « little elephant », it is said, « if you burn his hair or his bones in any place whatever, that place is for ever free from devils or snakes, nor will ever any evil thing be found there. » In the *Nuzhat* the smoke of the elephant's bones will keep off worms and other pests from the land, and will drive mosquitos out of a house.

In both, the dolphin rescues drowning mariners; but this is given from an Arabic version of the *Physiologus*, and seems not to exist in Western collections.

In both, neither the male nor the female crow takes another mate when one has died.

In the *Nuzhat*, the ostrich eats fire; in the *Physiologus* it « swallows even glowing iron and nails and fiery coals ». In the *Physiologus*, the ostrich is the bird that can carry off an elephant; but in the Nuzhat this is the *'anqâ* or *sîmurgh*.

In both, the phoenix dwells in India; and in both is regenerated from a worm in the ashes after it has burnt itself, though the accessory details are different in the two accounts.

The halcyon, in the *Physiologus*, broods on her eggs seven days, during which time the sea is calm (LIDDELL and SCOTT, and BREWER's « Dictionary of Phrase and Fable », give fourteen days as the period of calm). There is a reminiscence of this in the description of the *fanûn* (the reading of this name is doubtful) in the *Nuzhat*, a bird which lays its eggs on the face of the water in the Indian Sea, and hatches them in fourteen days, and during those days the sea never becomes rough.

While in the *Nuzhat* the salamander « usually lives in the fire », in the *Physiologus* it actually puts out the fire.

In both, the ant, when storing up food, bites the grain in two pieces, so that it may not sprout.

There can hardly be any question of direct borrowing on either

side; the similarities are due to the descent of tradition from a common source.

7. — *An English Comparison.*

In the middle of the 13th century an English Franciscan, BARTHOLOMEW DE GLANVILLA, wrote a compendium of knowledge very like the *Nuzhat* in scope. GLANVILLA begins with Theology, and treats of the Trinity, the Angels, etc.; he proceeds to consider Man, — his Psychology, Physiology, Anatomy, Sociology; then come Medicine; Astronomy, the Calendar; the Elements, and Meteorology; Birds, Geography, Mineralogy, Botany, Beasts and Insects. The work was very popular; there were ten editions in the 15th century, and the last editions were published in 1535 and 1582.

There is however no great degree of similarity between the contents of the zoological sections in GLANVILLA and in the *Nuzhat*. A few resemblances there are; there is the worm in the ashes of the phoenix, which grows into another phoenix. In GLANVILLA also, as in the *Physiologus*, the salamander does not only manage to live in the fire, but puts it out. In GLANVILLA the elephant never lies down to sleep, but leans against a tree (this is stated in the *Physiologus* also); the reason is not given by GLANVILLA, but knowing the tradition we can guess a connection with the absence of joints in his legs. Presumably these statements were taken by GLANVILLA directly from the *Physiologus*.

The general level of knowledge is much the same in GLANVILLA as in the *Nuzhat*. GLANVILLA also has his mythical creations, — Mermaids, Fauns, and Satyrs, as well as monsters which partake of the nature of more than one of the better known beasts, — for example, the Omocentaur, the offspring of the bull and the ass.

8. — *Arabic and Persian Zoology after the Nuzhat.*

One great name follows that of MUSTAUFÎ in the list of zoological authors of Islamic countries, — that of AD-DAMÎRÎ, a large part of whose work, the *Ḥayâtu-l-Ḥayâwân*, was translated from the Arabic by JAYAKAR (London and Bombay, 1906, now out of print); the translation however was never completed. JAYAKAR's Introduction gives an account of the author's life, of the characteris-

tics of the book, and of its place in Arabic literature; a shorter sketch of the author and his work is that by CARRA DE VAUX in the second volume of his *Les Penseurs de l'Islam*.

KAMÂLU-D-DÎN MUḤAMMAD B. MÛSÂ AD-DAMÎRÎ, a jurisconsult by profession, was born at Cairo in A. H. 745 (A.D. 1344), and died there in 805 (1405). The *Ḥayâtu-l-Ḥâyâwân* was finished, according to BROCKELMANN, in 773 (1371), 33 years after the *Nuzhatu-l-Qulûb*. It is a large work, comprising 1383 pages in the Cairo lithographed edition of A.H. 1330 (A.D. 1912). It is however no exaggeration to say that the amount of zoological information contained in it is scarcely more in volume than that in the zoological section of the *Nuzhat*; the work is really philological and literary in its objects, and is composed mainly of anecdotes, grammatical disquisitions, citations of proverbs, traditions, legal decisions, the interpretation of dreams of animals, and excursus of various kinds; for example, the author goes so far as to introduce in the middle of the section on the Goose, a history of the Caliphate extending to more than 100 Arabic pages (equal to 130 pages of the translation). Since the Cairo edition of the text is easily procurable, and the extant translation of Jayakar comprises three-quarters of the work, I need not say more about it here.

The only other Arabic zoological work after the date of the *Nuzhat* given by BROCKELMANN is MUḤAMMAD B. 'ABDALKARÎM AṢ-ṢAFADÎ's *Al Multaqat min 'Ajâ'ib al Makhlûqât wa Ḥayât al Ḥayâwân*, i.e. A gathering or gleaning from QAZWÎNÎ's *'Ajâ'ibu-l-Makhlûqât* (described above) and DAMÎRÎ's work; this was compiled in A. H. 896 (A.D. 1490), and exists in manuscript at Constantinople.

I know of no work in Persian on Zoology subsequent to the *Nuzhat*.

9. — *The Importance of the Zoological Section of the Nuzhat.*

The Zoological Section of the *Nuzhatu-l-Qulûb* constitutes therefore, slight and immature though it is, one of the very few extant zoological treatises of the Islamic East, — and is apparently the only one whose primary object can be with any degree of truth described as scientific; the rest are essentially literary or philological, or have other ends in view than the scientific.

V. THE NUZHATU-L-QULÛB IN RELATION TO MEDICINE.

Under the heading « Properties » (Khawâṣṣ), or often without any special heading, there is given after the description of each animal a list of the medical (and magical) uses of its several parts. We thus have a « Materia Medica », — a list of the drugs of animal origin used in Persia at the time of the compilation of the *Nuzhat*; the botanical and mineralogical sections similarly include the uses of the vegetable and mineral drugs. Besides a list of drugs we thus obtain the names of the diseases in which they were employed; and both lists contain much that is interesting.

1. — *The Diseases mentioned in the Zoological Section.*

I give below a fairly complete list of the diseases for which the animal remedies were prescribed, with their modern equivalents. It is not always a simple matter to determine the modern term which should be used to render the Persian or Arabic; dictionary translations can of course be found, but are not in all cases satisfactory. Sometimes the Persian or Arabic term includes more than one condition now recognized as distinct; sometimes there is a real doubt as to what is meant.

In deciding the exact meaning of a number of the names of diseases I must acknowledge the help I have had from a work which was brought to my notice by the late Prof. BROWNE. In 1874 JOH. L. SCHLIMMER, Senior Professor of Medicine at the Polytechnic College of Persia, Principal Medical Officer and titular Colonel of the Persian Army, and Sanitary Officer of Teheran, published at Teheran a *Terminologie Medico-Pharmaceutique et Anthropologique Française-Persane*. This, though containing a number of sometimes lengthy disquisitions and extracts from his lectures, is essentially a glossary of French medical (including anatomical and pharmaceutical) terms, with their English and German equivalents, rendered into Persian. The work, which is a lithograph, comprises 600 folio pages; its usefulness is much enhanced by an index, which gives an alphabetical list of the *Persian* terms with the pages on which they are to be found. But it is of course not certain that Persian medical terms are used today in the sense which they bore in the 14th century.

I give first a few notes on the names of certain diseases which

might cause difficulty, or have, as I think, sometimes been misapprehended in the past.

(1) Several words are translated by «leprosy» in the dictionaries; (*a*) *baraṣ* — leprosy of the anaesthetic or maculo-anaesthetic kind. The infiltration takes place principally into the nerves; the nerve fibres are first irritated, then destroyed; sooner or later a macular eruption appears as flat red spots, which grow larger, the centres becoming pale; the skin in the affected area is anaesthetic, wrinkled and scaly; and along with the loss of the sense of pain trophic changes occur, leading for example to the falling off of fingers and toes, or portions of them.

(*b*) *judhâm* — leprosy, as I take it, of the tubercular kind, characterized by nodules, which occur most often on the limbs and face, and as they increase in size totally alter the patient's appearance. « Elephantiasis » is given as an alternative translation in both LANE and STEINGASS, and is even used as a rendering by BROWNE in his *Arabian Medicine*; but this is a relic of the confusion introduced by GALEN (compare what is said under *dâ'u-l-fîl*).

(*c*) *bahaq* — according to LANE, the mild species of leprosy termed « alphus » or « vitiligo alba », or, alternatively, the species of leprosy termed « melas » or « lepra maculosa nigra ». SCHLIMMER uses *bahaq* as the translation of « melas », a disease which he had not seen personally, but which is described as characterized by spots; it is of two kinds, black and white. In the black variety, the skin becomes black, showing red under the pressure of the finger, and feels rough; but the hairs do not change their natural colour. In the white, the colour tends towards white, or rather differs little from the normal; the skin is rough to the touch, while the hairs remain black or become date-coloured. A distinction from *baraṣ* is that in the latter the hairs become white.

The description corresponds to *sclerodermia*. In the diffuse form of this condition, the skin changes are diffuse and symmetrical; there is stiffness, induration and immobility, — a « hide-bound » condition; some change of colour takes place, to a waxy, parchment-like appearance, while there is often increased pigmentation in the neighbouring skin. In the circumscribed form known as *morphoea* (which term I have chosen in my translation) there are yellowish-white waxy or ivory-like spots, and there is a stiffening of the skin. According to CASTELLANI and CHALMERS

diffuse sclerodermia is rare [in the tropics] but morphoea is rather frequent.

(II) *bayâḍu-l-'ain*, I take to be *corneal opacity* (lit. « whiteness of the eye »; not in SCHLIMMER or LANE).

(III) *taqṭîr*, a dribbling or dropping, sc. of the urine; according to LANE, from cold; i. e., incontinence, but neither strangury nor diabetes, as Steingass gives.

(IV) *khunâq* : SCHLIMMER gives this as the Persian translation of « angine couenneuse », « angine maligne », « angine diphtherique », « croup », — i.e., diphtheria. The dictionaries also give « quinsy »; the literal meaning is « suffocation, strangulation » which would include the choking or suffocation from both the diphtheritic membrane and tonsillar abscess, and I have little doubt that both were included under the term, quinsy being perhaps oftener met with than diphtheria.

(V) *dâ'u-th-tha'lab*, « fox disease » ; the disease of the scalp known as « scald-head », common in the East, giving rise to a patchy baldness. It is a ringworm of the scalp, the *tinea capitis tropicalis* of CASTELLANI and CHALMERS; while this is common, alopecia areata, according to the above writers, « is apparently rare among natives ».

(VI) *dâ'u-l-fîl*, « elephant disease, » elephantiasis; a filariasis due to *Filaria bancrofti*, introduced by the bite of a mosquito; the adult worms lie in the lymphatic vessels and may obstruct the flow of lymph, giving rise to a block in the vessels, and consequent swelling. The huge swelling of the legs is well known, and has given the name to the condition. The word « elephantiasis » was first used by CELSUS to denote what we know as leprosy; GALEN included the above condition of filariasis under the same term, and with the passage of time the error became established. The Arab physicians of the ninth and tenth centuries however described the filariasis as « dâ'u-l-fîl » apart from leprosy.

(VII) *diqq*; LANE gives only « hectic fever », SCHLIMMER « marasme, Eng. atrophy »; presumably any wasting disease with long continued fever, phthisis among them.

(VIII) *ṣar'*, epilepsy; according to SCHLIMMER epilepsy is relatively very common among the negress slaves in Persia, and very rare among Persian women.

(IX) *ghashâwa*, « a veil », seems to be something different from corneal opacity (bayâḍu-l-'ain), — perhaps a diffuse corneal opacity, while *bayâd* is a leucoma? The word is not in SCHLIMMER. But *ghishâ'* (« a cover or covering », LANE) according to SCHLIMMER in modern Persian is « night-blindness, hemeralopia ».

(X) *kalaf*, « freckles » according to the dictionaries; « a dingy redness that comes upon the face » (LANE); the word is not in SCHLIMMER. This condition is mentioned not very infrequently; what we know ordinarily as « freckles », however, would scarcely be of such importance; nor, perhaps, would it be easily seen in a dark-complexioned race. I think *Chloasma* is meant. « Chloasma is a very common affection in the tropics.... the dark brownish or dirty yellowish patches of chloasma are plainly distinguishable in the skin of Indian and Sinhalese natives, though in African negroes they may be indistinguishable » (CASTELLANI and CHALMERS). The discoloration commonly affects the face. In chloasma solare, in addition to hyperpigmented spots, depigmented patches are also developed. There are other forms of the affection, including chloasma malaricum in chronic malaria.

(XI) *laghwa*, facial paralysis; the mention of this affection occurs fairly often, and the condition may therefore have been common, either as part of a hemiplegia (along with which it is often mentioned) or as BELL's palsy, affecting the facial nerve only, and produced, for example, by exposure to cold as in sleeping outside.

(XII) *nuzûl mâ'i-l-'ain*; in modern Persian, according to SCHLIMMER, *nuzûl-i-âb-i-marwârîd* is used for cataract, *nuzûl-i-âb-i-sabz* for glaucoma. Formerly *nuzûl mâ'i-l-'ain*, or *nuzûl-i-âb-i-chasm* probably included both; when I was in India many patients used to come with chronic glaucoma, thinking it was cataract and could be cured by the usual operation for the latter.

The total number of diseases is less than 100; a few more general terms are also found, such as « pain in the spleen », « pain in the kidney », etc.

âb basta,	retention of urine.
iḥshâsh,	dead foetus in the womb (?)
ikhtinâq-i-raḥm,	hysterics (SCHL.)
irti'âsh,	trembling, tremors.
istirkhâ,	flaccidity (paralysis).

istisqâ,	dropsy
ishâl,	diarrhoea
aṭrûsh,	deafness
imtilâ,	surfeited stomach
andûh,	anxiety (grief, sorrow, SCHL.)
bâdha-i-zisht, bâdha-i-ghalîẓ,	troublesome wind
baraṣ,	maculo-anaesthetic leprosy
bawâsîr	piles
baulu-l-farâsh,	bed-wetting
baul basta,	retention of urine
bahaq,	morphoea
bayaḍu-l-'ain,	corneal opacity (? leucoma)
bîkhwâbî,	sleeplessness
târîkî-i-chashm,	dimness of vision
tab-i-rib',	quartan fever
tashannuj,	painful cramp (SCHL.); also convulsions (SCHL.)
taqtîr-i-baul,	dribbling of urine (incontinence)
thûlûl, pl. thaâlîl,	a wart (SCHL.)
judhâm,	tubercular leprosy
jarab,	scabies (SCHL.)
junûn,	insanity; frenzy, mania (SCHL.)
ḥummâ,	fever
ḥabbu-l-qar',	tapeworm (SCHL.)
khadar,	torpid (of limbs) ?
khafaqân,	palpitation (SCHL.)
khanâzîr,	tuberculous glands
khunâq,	diphtheria; also quinsy.
dâ'u-th-tha'lab,	ringworm of the scalp
dâ'u-l-fîl,	elephantiasis
dard-i-dandân,	toothache
dard-i-shush,	pleurisy (SCHL.)
diqq,	marasmus; atrophy (SCHL.)
dummal,	boil; abscess (SCHL.)
dandân-i-kirm-khûrda,	carious teeth (lit. worm-eaten teeth).
ru'âf,	epistaxis (SCHL.)
ra'sha,	tremors (SCHL.)
ramad,	ophthalmia

rîsh,	a wound
zabân-i-basta,	dumb
sabal,	pannus (SCHL.), a web in the eye.
sapîdî-i-chashm,	opacity of the cornea
sarsâm,	frenzy; delirium (SCHL.)
saraṭân,	cancer
surfa,	cough
sarmâ-yâfta,	frost-bitten (?)
su'âl,	cough (SCHL.)
sill,	consumption, atrophy (SCHL.)
salasu-l-baul,	diabetes
sang-i-mathâna,	stone in the bladder
sûkhta,	a burn
saudâ'î,	melancholy (but sawdâ', a rash, SCHL.)
shab-kûrî,	night blindness
shuqâq, pl. shaqâ'îq,	fissure (shuqâq-i-maq'ada, fissure of the anus, SCHL.)
ṣudâ',	headache
ṣar',	epilepsy
ṭuhâl,	disease of the spleen
ṭurûsh,	deafness
ṭalq,	pains of childbirth
ẓufra,	pterygium (SCHL.)
'irqu-n-nisâ,	sciatica
'usru-l-baul,	strangury (SCHL.)
'usru-l-wilâdat,	difficult labour
ghishâ,	night-blindness (SCHL.)
ghashâwa,	diffuse corneal opacity (?)
ghashayân,	fainting fit (ghashy SCHL.)
falj, fâlij,	hemiplegia, palsy (SCHL.)
qarḥ,	ulcer
qurûḥa-i-shush,	ulcers of the lungs
qûbâ,	rash, exanthema (SCHL.)
qûlinj,	colic
kalaf,	chloasma
gûsht-i-afzûnî,	proud flesh (gûsht-i-zâ'îda, SCHL.)
laghwa,	facial palsy

mafâṣil,	rheumatism (used for waj'-i-mafâṣil)
(bar âmadan-i-)mûy bar chashm,	trichiasis
nâsûr,	fistula (SCHL.)
nuzûl-i-âb-i-chashm,	
nuzûl-i-mâ'ul-l-'ain,	cataract (plus glaucoma probably)
niqris,	gout
waj'u-l-mafâṣil,	rheumatism
waram,	swelling; inflammation (SCHL.)
yaraqân,	jaundice.

2. — *Common Diseases which find no mention.*

Certain well known diseases of the East do not appear in the above list. As examples may be mentioned cholera, dysentery, plague, malaria (except in the form of quartan ague), and trachoma.

Cholera, *wabâ* in modern Persian according to SCHLIMMER, not *haiḍa* (pron. *haiza*) as in India; this latter term is used for a diarrhoea from surfeit, and for the cholera of weaned children (SCHLIMMER). The word *wabâ* occurs once in the present section of the *Nuzhat*, but it appears to have, as originally and properly, a general sense, — pestilence or epidemic disease (« a great number of frogs above the usual in a country is a cause of the outbreak of pestilence »). Perhaps cholera is included under *ishâl*, diarrhoea, or under *qûlinj*, colic.

Dysentery, in mod. Persian, according to SCHLIMMER, *ishâl-î-khûnî* or *ishâl-i-damawî* may similarly have been included under diarrhoea or colic.

Plague, *tâ'ûn*, possibly had not come under the author's notice.

Trachoma, granular lids, was probably best known by its consequences, — irritation of the conjunctiva and, later, infiltration and a white opacity of the cornea (*bayâḍu-l-'ain*).

The most surpristing omission is perhaps that of any variety of *malaria* except quartan ague, *tab-i-rib'*. Intermittent fever in general is in modern Persian, *nauba*, *ḥumma-i-dâ'ira*, *tab-i-larz* (SCHLIMMER).

It must not be forgotten that there are botanical and mineralogical sections of the *Nuzhat*, as well as the present zoological part, and that possibly diseases may find mention in them which are not referred to in the present part. Yet this as hardly probable,

at least in the case of diseases of any frequency; most (nearly all, I think) of the diseases in my list are mentioned more than once in the zoological part, and many occur again and again; so that the chance of a common disease finding mention in the 52½ pages (of the Bombay lithograph) which treat of mineralogy and botany, and escaping reference in the 38 pp. on zoology, is small.

3. — *The Diseases most frequently mentioned.*

On reading the text of the *Nuzhat* it will soon be noticed that, as just said, certain diseases are mentioned with considerable frequency; and we must ask if we can base on this fact any conclusions as to the frequency of occurrence of the diseases themselves. At first sight it would seem as if we cannot; the number of times that a disease is mentioned in a Materia Medica such as this corresponds to the number of drugs that have been employed in treating it. The more reliable any drug is found to be, the fewer rivals it will have; the commonest disease in the world, malaria, would nowadays find mention under a very small number of remedies. Frequency of mention means therefore inadequacy of any single remedy rather than frequency of occurrence.

On the other hand we of today, looking through the list of animals and of their several organs that have been used as remedies, may find it hard to believe that *any* of them can have been adequate to cure the complaints for which they were prescribed; and it is impossible to suppose that a single mention of a given disease means that the corresponding remedy was of such efficacy that there was no need to search for other cures.

Since thus the efficacy, or rather the inefficacy, of the remedies cannot be what determines the frequency with which the various diseases receive mention, it is probable that the frequency of their occurence has more to do with it than anything else. A larger number of remedies would naturally be tried in the commoner diseases, and no doubt *some* recoveries or remissions would follow in the case of any remedy that was not actively harmful; while it is unlikely that there would be a large armamentarium for the treatment of a really rare disease; and in a popular compendium like the present it would not be worth while mentioning a large number of drugs for only a very occasional use.

Bearing in mind, then, the possibility of mistakes in arguing from frequency of mention to frequency of occurrence, the following appear to have been among the commonest diseases in 14th century Persia : — (I) *Cataract*; (II) *Corneal Opacities*; (III) *Stone in the Bladder*; (IV) *Ringworm of the Scalp*; (V) *Leprosy* (maculo-anaesthetic and tubercular); (VI) *Tuberculous Glands*. As regards these, no comment is required; the picture given by the *Nuzhat* is doubtless much the same as what we find today; at least, speaking from personal experience, it is much the same (except perhaps as regards leprosy) as is seen in a neighbouring region, the Punjab.

(VII) *Hemiplegia* is mentioned rather frequently, and facial palsy often in conjunction with it. My own experience in the Punjab is that apoplexy with its consequences is not common. On general grounds also it is a little surprising to find *fâlij* occurring so often; one thinks of hemiplegia as associated with the high blood-pressure and arterial degenerations of our latter-day civilization rather than with the simpler conditions of an earlier time.

(VIII) *Quartan Fever*, — the only variety of fever of which the periodicity is mentioned. I have commented on this above. « Fever », without the qualifying adjective, is rare.

(IX) Not very uncommon is the mention of *Khunâq*, at present (SCHLIMMER) used for *diphtheria* or croup; but, as explained above, *quinsy* or tonsillar abscess is probably to be included. The word Khunâq means literally « a throttling, strangling, choking ».

(X) *Morphoea*, and (XI) *Chloasma* have already been commented on above.

4. — *Certain Special Classes of Remedies.*

It is interesting to notice that much attention was paid to the hair, and not to the hair of the head only. Depilatories, — remedies for getting rid of superfluous hair, — are frequently mentioned; for example, the bile of a porcupine, the blood of a bear mixed with chiretta, burnt frog; or again « if a leech be placed in a glass till it dies, then dried and rubbed up, and applied to a place where hair grows, no more hair will grow there ». Quite as numerous are the applications for causing a growth of hair; e.g., the ashes of earthworms applied to the head with oil of roses, or « five

drachms of a mule's hoof mixed with oil of roses, if rubbed on any place, will cause hair to grow there, and will cure scald head » (i.e. tinea capitis).

But the class of drugs that is mentioned oftener than any other is the aphrodisiac. The number of substances which had the reputation of increasing sexual power, some when taken internally, others when applied locally to the male organ, was very great, and presumably indicates a considerable resort to this class of drugs.

5. — *On the Animal Remedies of the Nuzhat in General.*

(a) *The Parts Used.* Of the parts of animals used as medicaments perhaps the one most commonly mentioned is the *bile*. The *brain* was also frequently used, and so too the *blood*. The *fat* was more often employed, perhaps, than the *flesh*. Other organs such as the *spleen* and the *heart* are occasionally mentioned. The ashes of the *bones* were in use; sometimes a particular bone is specified, most frequently the *astragalus*. The *skin* is often referred, to, almost always for sleeping on. Indeed nearly every part seems to have been used in some animal or other. Whole animals are used, if small, or sometimes their ashes; e.g., earthworms « baked and eaten with bread, reduce the size of a stone in the bladder and bring about its expulsion. When dried and eaten they cure the yellowness of jaundice. Their ashes applied to the head with oil of roses make the hair to grow. »

(b) *The Principles of Treatment.* I may briefly remind my readers that there were in all nine types of Complexion, or Temperament, — the four simple complexions, hot, cold, dry and moist; four compound, hot and dry, hot and moist, cold and dry, and cold and moist; and the equable, in which no quality preponderated. To quote from BROWNE's *Arabian Medicine*. « Excluding the rare case of a perfect equilibrium, every individual will be either of the Bilious Complexion, which is hot and dry; the Atrabilious or Melancholic, which is cold and dry; the Phlegmatic, which is cold and moist; or the Sanguine, which is hot and moist. In treating a hot, cold, dry or moist disease with a food or drug of the opposite quality, regard must be paid to these idiosyncrasies. The Natural Property inherent in each food or drug exists in one of four degrees. Thus, for example, such a

substance if hot in the first degree is a food; if hot in the second degree, both a food and a medicine; if hot in the third degree, a medicine, not a food; if hot in the fourth degree, a poison. »

(c) I may briefly refer to the fact that *Polypharmacy* was apparently not in fashion. The remedies mentioned in the *Nuzhat* are mostly quite simple, one thing alone, or sometimes mixed with oil or some other vehicle. We never get such a prescription as, for example, one in use in the 18th century in England, for fevers in children, measles, and smallpox, compounded of burnt hartshorn, white amber, red coral, crabs' eyes and claws, saffron and cochineal; yet this is a comparatively mild example of polypharmacy.

(d) Finally, it may be added that there are a few instances where the *homoeopathic principle* (*similia similibus curantur*) can be detected. For example, if the spleen of a porcupine be roasted and eaten by one with disease of the spleen, he will be cured; if a tick be put in the mouth of a child that has not yet taken any food, and that child, arrived at manhood, takes water into his mouth and scatters it over sheep infested with ticks, all the ticks will fall off and die.

VI. MAGICAL USES OF ANIMALS AND THEIR PARTS.

Besides the therapeutic uses of the several organs of the various animals, other applications are also frequently given. These are sometimes of general household utility, such as driving away insects or reptiles, often said to be a property of the smoke of the dung or of certain organs; sometimes they can only be described as magical.

The line between magical and therapeutic uses is hard to draw; and it is often difficult to say in which category a given use should be placed. Thus it is stated that if a peacock's claw be tied on a woman in the pains of childbirth it will relieve them immediately; one is inclined to call this magic, but if the instruction had been to calcine the claw and give a little of the powder internally — presumably a no more rational or efficacious proceeding — we should consider it therapeutics.

I have collected 32 instances of what we should call definitely magic; but it would be tedious to give them all. I content myself with a few examples, taken quite at random : —

(i) Carrying about the ankle-bone (astragalus) of the hare averts the evil eye.

(ii) The crop grown from seed that has been sifted through a sieve made of an ape's skin is safe against pests.

(iii) If two enemies eat together of the fish *alyan* their enmity will be converted to friendship.

(iv) When the blood of an owl is burnt among carousers the smoke from it will cause a brawl.

(v) If the blood and bones of the bird called the *ghawwâṣ* are burnt along with human hair, the owner of the hair will be impatient to visit the one who burns it.

(vi) If frog's blood be rubbed on a person's face, every one that sees him will be fond of him.

(vii) Any place in which the eye of a black dog is buried will fall into ruins.

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A Revaluation of Harriot's Artis Analyticae Praxis.

JOHN WALLIS' *Treatise of Algebra* (London, 1685, Latin edition 1693) contains a history of algebra which is serviceable even to modern readers. The only severe criticism which has been passed upon it is an extreme partiality to THOMAS HARRIOT and an unwarranted charge of plagiarism against DESCARTES. WALLIS credits HARRIOT with the discovery of certain fundamental theorems in the theory of equations (theorems on the number of roots of an equation, the relations between roots and coefficients, the rule of signs) which some other historians are not willing to allow. This diversity of judgment relating to HARRIOT has continued down to our time. Mathematical histories of the present day contain widely divergent statements on this point. It is the endeavor of the present paper to make a careful and thorough study of HARRIOT's noted book, the *Artis analyticae praxis*, with the view of ascertaining its real content and of arriving at its real merit. In estimating the book, it must be remembered that though printed in 1631, it was written more than ten years earlier. HARRIOT died in 1621.

Number system and Notation. Our initial inquiry is: What number-system did HARRIOT employ? What kind of roots of equations did he admit? The correct answer of these questions is the key to the solution of the questions which have been in dispute for three centuries.

We premise that, following the innovation due to FRANCIS VIETA, his great predecessor, HARRIOT uses letters to represent numbers in equations; vowels stand for unknown numbers, consonants for known numbers. He employs small letters to VIETA's capital letters.

Three hundred years ago the need of explicit initial statement relating to the number system used in a treatise on algebra was not recognized. The answers to our inquiries must come from

short explanatory notes occurring occasionally in different parts of the book. HARRIOT's algebra is less rhetorical and more symbolic than perhaps any other algebra that has ever been written. As in VIETA, so in HARRIOT, a consonant stands for a known *positive* number. Thus b is always positive. To mark a negative number, a minus sign is attached. On page 7 of HARRIOT's book one finds « $-d$ »; « addenda $\begin{matrix} a+b \\ -d \end{matrix}$ » yield « summa $a+b-d$ ». Ordinarily he uses no name for « $-d$ » or « $-b$ »; it simply appears in his algebraic expressions. The words « plus » and « minus » are not used. Only once, on page 143, toward the end of his book, does he incidentally employ the words « affirmative » and « negative » in connection with numbers. These terms occur in an explanatory note relating to the operation of combining partial products in the solution of a numerical cubic equation by approximation. He does not explain the double use of the sign —, to mark the operation of substraction and also to designate negative number. Nowhere does HARRIOT mention by name imaginary or complex numbers. Only once does he write down such a number. On page 99, when dealing with the algebraic solution of a cubic, he is led by a transformation to the pure cubic equation

$$« eee = ccc + \sqrt{-ddddddd}.$$

impossibilem reducere ». He further characterizes this equation (page 100) as « aequatio praescripta (propter $\sqrt{-ddddddd}$. inexplicabilitatem) impossibilis ». After declaring the equation *impossible*, and $\sqrt{-ddddddd}$. *inexplicable*, he gives this matter no further consideration in any part of his book. Nowhere else do imaginary numbers appear in his formulas. It is quite clear, therefore, that HARRIOT admits into his system positive and negative numbers, but rejects imaginary or complex numbers. In his algebra, it is not possible to give a meaning to every combination of symbols involving positive and negative numbers.

Nature of Roots. Our second inquiry, relating to the nature of the roots admitted by HARRIOT, leads to an unexpected surprise. He rejects negative roots and recognizes only positive roots. Apparently HARRIOT did not attach to the negative the importance that he did attach to the positive. His great forerunner VIETA, spoke of the *vitium negationis* (1), the « defect of the negative », and it appears

(1) FRANCISCI VIETAE, *De emendatione aequationum*, in *Opera* (Leiden 1646) p.132.

that HARRIOT had a somewhat similar limited view point (2). Since JOHN WALLIS, as well as recent historians have interpreted HARRIOT differently, and have claimed that HARRIOT admitted negative roots, it is incumbent upon us to be explicit in our exposition. It is easy to obtain a wrong impression from a superficial examination of HARRIOT's book. In no other book of his time do formulas stand out so conspicuously. Some pages, 12 and 13 for instance, have hardly a word of explanation. Often the ideas are conveyed to the eye by mathematical symbols alone. HARRIOT builds up his literal equations by finding the products of binomial factors. Thus on page 12 he writes down the expanded products of $(a - b)(a - c)$, $(a - b)(a + c)$, $(a + b)(a + c)$ and obtains three quadratic expressions, leading to what he calls « canonical » equations. We quote the second multiplication :

$$\begin{array}{llll} 2 \ . \ . \ . & a - b & = & aa - ba \\ & a + c & & + \ ca - bc \end{array}$$

Is it not at once obvious from mere inspection of this process that, in the resulting equation

$$x^2 + (-b + c)\ x - bc = 0$$

HARRIOT recognized not only $+ b$ as a positive root, but also $- c$ as a negative root? Such an inference might seem obvious to a modern mathematician. As stated above, some historians have drawn this conclusion. But a close examination of HARRIOT's book indicates that the inference is incorrect.

Let us follow HARRIOT's argument relating to the above product. On page 16 he places $a = b$, then writes $a - b = 0$. Multiplying both sides of the last equation by $a + c$, he obtains

$$aa - ba + ca - bc = 0$$

and therefore

$$aa - ba + ca = bc.$$

It thus appears that b is a root. His language is, « Therefore the proposed canonical equation obtained from the previous multiplication is here deduced by placing a equal to b » (Aequatio igitur

(2) In rejecting negative roots, VIETA and HARRIOT held less advanced views than did some of their predecessors, for example, CHUQUET and CARDAN.

canonica proposita ab originali designata, posito *b*. ipsi *a*. aequali deducitur). There is here no recognition of $-c$ as a root. He does not place $a = -c$; he does not write $a + c = 0$; he does not multiply both sides of this equation by $a - b$ and arrive at the above quadratic equation. The argument applied to *b* is not applied to $-c$.

HARRIOT performs 32 multiplications of binomial factors, namely the 3 multiplications indicated above and leading to quadratic polynomials, 11 multiplications of the type

$$(a - b)(a - c)(a + d),$$

leading to cubic polynomials, 18 multiplications of the type

$$(a + b)(a + c)(a + d)(a - f),$$

yielding quartic polynomials. Each of the polynomials leading to positive roots is discussed separately in the manner as we have indicated for

$$aa - ba + ca - bc.$$

In case of the product

$$(a - b)(a - c)(a + d),$$

on page 17, HARRIOT puts $a = b$ or $a = c$ and reaches the final conclusion : « Therefore the proposed canonical equation obtained from the previous multiplication is here deduced by placing *a* equal to *b* or *c*. » Again, the negative root $-d$ is ignored.

Among the 32 products are those for

$$\begin{gathered}(a + b)(a + c),\\ (a + b)(a + c)(a + d),\\ (aa + bc)(a + d),\\ (a + b)(a + c)(a + d)(a + f),\\ (aaa + cdf)(a + b),\\ (b + a)(c + a)(df + aa)\\ (bc + aa)(df + aa).\end{gathered}$$

These products do not receive separate treatment; HARRIOT does

not simultate the procedure of previous cases by writing $a = -b$, $\ast\ast\ast a + b = 0$, etc. He disposes of them in one single sentence occurring in a Note on page 27: « As to the derivations from previous multiplications of the canonical (forms), namely the quadratic number 3, the cubic numbers 4 and 8, the biquadratic numbers 5, 9 and 18, since they cannot be derived except on the supposition of negative roots, they will be disregarded as quite useless. (Canonicarum vero deriuationes ab his originalibus, scilicet, 3. Quadratica : 4. et 8. Cubica : 5, 9 et 18 Biquadratica, cum absque radicum priuatiuarum (3) suppositione fieri nequeant, tanquam inutiles negliguntur). This is the most important sentence in the whole book. It contains his algebraic creed. Negative roots are banned.

From HARRIOT's sentence we may infer that he recognized the possibility and considered the advisability of admitting into his algebraic system negative roots of equations, but that he decided that such a course would be quite useless. In so doing he acted within his rights as a scientific worker. His view was not that of the modern mathematician; his outlook was very circumscribed. Just as NAPIER considered only logarithms of positive numbers, so HARRIOT confined roots of equations to positive values. Both writers missed beautiful generalizations. Bearing in mind HARRIOT's assumption, we find that with only one exception his reasoning in various parts of the book is cogent. Without that assumption, inconsequent statements would arise at every turn.

Further evidence that Harriot recognized only positive roots. In HARRIOT's view some quadratic equations have two « roots », others only one « root », (ie. only one positive root), and still others no « root » whatever. Similarly for cubic and quartic equations. He has a section on the transformation of equations. An illuminating analysis occurs on pages 89 and 90. The cubic

$$aaa - 3.baa = + ccc$$

which has a « root » is transformed by the assumption

(3) This expression « privative roots » to signify negative roots is not found in VIETA, but is found in German writers, INITIUS ALGEBRAS (about 1524) and IOHANNES SCHEYBL, 1562. See TROPFKE, *Geschichte der Elementar-Mathematik*, 2. Ed., Vol. II, p. 51. It is evident that HARRIOT's study of algebraic works was not confined to those of VIETA.

$$a = -e + b,$$

into the cubic

$$eee - 3.bbe = -ccc - 2.bbb,$$

which is « an impossible equation »; it has no « root », for he shows that one cannot have $e = b$, nor $e > b$, nor $e < b$. Harriot's reasoning in the last case is particularly interesting. If $e <$ b, let $e = b - d$. Substituting this in the cubic yields $d > b$, which is impossible, because the assumption $e = b - d$ implies that $d < b$. In HARRIOT's own words : « Ergo $d > b$. Sed cum positum sit $e = b - d$. est $b > d$. quod est quoque impossibile ». This reasoning is cogent in an algebra which recognizes only positive roots. Two modern historians state that in this example HARRIOT proved that negative roots are impossible. Such is not the case. HARRIOT simply rejects a negative root as inconsistent with his initial assumption. HARRIOT's rejection of negative roots and his use of letters to represent only positive numbers greatly complicate the transformation of equations. The linear transformation of the cubic and quartic for the purpose of removing the second term is treated in 32 separate cases. The unusual problem confronts him to transform the equation into another which has a positive root and is « possible ». He achieves this by assuming (we use modern notation and let b be positive, also let $n = 2$, 3 or 4) that in

$$x^n - nbx^{n-1} + \ldots = 0,$$
$$x = \pm y + b.$$

There result from a « possible » equation two transformed equations, one or other of which is certain to be « possible ». The equation

$$x^n + nbx^{n-1} + \ldots = 0$$

is more troublesome. It leads him to fourteen cases. In all but one, the assumption is $x = y - b$ and there is no assurance that the transformed equation is always « possible ». In one case HARRIOT *proves*, as we have seen, that it is « impossible » for any positive values of b, d, c.

An inconsistency. There is one transformation in which HARRIOT

proceeds contrary to his assumption that all roots are positive. On page 97, he starts out with the « impossible » equation

$$aaa + 3.baa + dda = - ccc,$$

in which there exists no (positive) value for a. He lets $a = - e - b$ and also $a = e - b$. Why he should proceed here in this manner, while in the other 13 cases he always starts with « possible » equations and avoids the assumption $a = - e - b$, he does not explain. His conclusion is that the equation resulting from the transformation $a = - e - b$ is one « whose root is $e = -a - b$ ». This case in which HARRIOT starts with an « impossible » equation is the only case in HARRIOT's entire book where we have noticed reasoning inconsistent with his assumption that all roots considered shall be positive.

Invalid claims for Harriot. We have shown that HARRIOT does not recognize either negative or imaginary roots. What becomes of the claim that HARRIOT had arrived at several fundamentat theorems in the modern theory of equations? One cannot credil him with the theorem that every algebraic equation of the n^{th} degree has n roots, for, from his point of view, some of these equations had no « roots » and the equation was « impossible ». Among the numerical equations that he solved there is a cubic for which he found two « roots » (page 148), but there is no numerical cubic equation for which he found three « roots ». However, a cubic resulting from

$$(a - b)(a - c)(a - d) = 0$$

is recognized as having the « roots » b, c, d. (page 55). The cubic obtained from

$$(a + b)(a - c)(a - d) = 0$$

has the « roots » c and d, and it is *proved* that there is no other « root » (page 54).

HARRIOT had no general grasp of the theorem on the relations between roots and coefficients, although, in the case of the quadratic

$$- aa + 370a = 9261$$

he found two « roots » and recognized their sum to be 370 and their product to be 9261 (page 130). The fact that he removed the second term of

$$x^n + nbx^{n-1} + \ldots = 0$$

by assuming $x = y - b$ does not prove a knowledge on his part that the sum of the roots is $-nb$. In fact, he applied this transformation to a cubic which had no « roots » (page 97). In cubics and quartics with integral coefficients, the coefficient of the highest power of the unknown being unity, he recognized an integral « root» to be an exact divisor of the absolute term (page 131), but he did not recognize the absolute term as always numerically equal to the product of all the roots.

He nowhere enunciates the Rule of Signs of DESCARTES. It was only by extensive analysis involving inequalities, that HARRIOT (pages 79-82) proved that

$$aaa - 3.bba = +2.ccc$$

had a « root » not only when $c>b$, but also when $c<b$, and even when $c = b$. Had he known the Rule of Signs, the conclusion that this equation may have a positive root would have followed instantly.

Merits of Harriot's Praxis. HARRIOT's *Praxis* stands out as a remarkable treatise for the beginning of the seventeenth century, even if the general theorems referred to cannot be legitimately ascribed to HARRIOT. It is a book which excels others in the great emphasis placed upon symbolic algebra. The use of small letters instead of the capital letters introduced by VIETA, was a step of progress. He introduced « canonical equations », obtained from the multiplication of given binomial factors, the positive roots of which were known by inspection. These « canonical » forms served as paradigms or patterns by which he determines the number of « roots » of common equations of the third and fourth degrees. He transforms equations into others whose roots are larger or smaller by a certain amount or are multiples of the original roots. He reduces the affected cubic to a pure equation. He invented the sign $>$ for « greater than » and $<$ for « less than », which are so excellent that they have won out against all compe-

titors. HARRIOT introduced a modification of VIETA's process of approximating to the roots of numerical equations. In VIETA's process the formation of the divisor used in finding the next digit in the root is quite laborious. HARRIOT forms only so much of this divisor as seemed necessary to determine the new digit. A still further improvement in forming a divisor was made later in the Newton-Raphson method of approximation.

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Scientific notes from the books and letters of John Winthrop, jr., (1606-1676).

First Governor of Connecticut.

The outstanding figure in the history of science in America during the seventeenth century is JOHN WINTHROP, Jr., obtainer of the Royal Charter of Connecticut and first Governor of this colony from 1659 to 1676, founder of Ipswich, Saybrook, New London and other New England towns, member of the Royal Society, promoter of colonial industries, soldier, pioneer, lawyer, statesman, physician, philanthropist, man of business and lover of science.

As one who has had under preparation for a number of years a history of colonial science in America, I wish to give in the present paper a few indications of the many-sided interest of the younger WINTHROP in science. The material presented is taken partly from books of his library (a large remnant of which, consisting of 270 volumes, is preserved in the Society Library of New York City) and partly from his papers and correspondence, preserved among the priceless WINTHROP papers of the Massachusetts Historical Society in Boston. JOHN WINTHROP, the younger, (portrait, fig. 1) was a graduate of Trinity College, Dublin, and, after being admitted to the bar in London in 1625, spent the next five years in travel and adventure, Padua, Venice, Constantinople and other cities being visited. It was during this time that he formed an acquaintance with many of the scientists and scholars with whom in after years he corresponded in Latin. When WINTHROP sailed in 1631 for Boston, which his father had founded the previous year, he had shipped to his new home his private library of over 1000 volumes. This collection of books was increased by donations and private purchase until the time of his death in 1676. The library then passed successively to his

son, WAIT WINTHROP, to his grandson, JOHN WINTHROP, also a distinguished scientist and Fellow of the Royal Society, and to his great grandson, JOHN STILL WINTHROP. The eldest son of the latter, FRANCIS B. WINTHROP, donated 270 of the books that belonged to his great great grandfather to the Society Library. Another son of JOHN STILL WINTHROP was THOMAS L. WINTHROP and it was a son of the latter, ROBERT C. WINTHROP, the famous statesman and orator, who donated the collection of manuscripts known as the Winthrop Papers to the Massachusetts Historical Society. A third JOHN WINTHROP, who was also distinguished as a scientist and Fellow of the Royal Society, was the Hollis Professor of Mathematics and Natural Philosophy at Harvard during the Revolution; he was a great grandson of ADAM WINTHROP a brother of the JOHN WINTHROP, Jr., whose scientific books and correspondence are referred to in the present sketch. (See Appendix of WINTHROP Genealogy).

The younger WINTHROP's interest in all branches of science is indicated by the nature of his books as well as by the character of his correspondence. Of the strictly scientific books in the WINTHROP collection of the Society Library 52 relate to chemistry or alchemy, 33 to medicine, 10 to physics, 9 to astronomy, 8 to mathematics and geometry, 8 to natural history, 3 to navigation, and a dozen or more scattered volumes to geography, metallurgy, military science, agriculture, and political economy. Of the other books, which are of the non-scientific class, 61 are of a religious character, 23 relate to history and travel, 13 are of a literary type, 12 are treatises upon witchcraft, astrology, magic and other occult subjects, 11 are grammars and textbooks of European languages, 10 relate to metaphysics and philosophy, 3 to law, 1 to horsemanship and 1 to mnemonics. In their special fields the books are well selected, the authors, for the most part, being men of note. The collection as it stands is unquestionably the largest fragment of a colonial scientific library now extant in the United States. The only similar library which in its time could compare with it was that of another Fellow of the Royal Society, Col. WILLIAM BIRD, of Westover, Virginia, but of which unfortunately all that now remains is the auctioneer's list of the titles, when BIRD's library and scientific apparatus were sold in 1778.

The linguistic accomplishments of the younger WINTHROP are

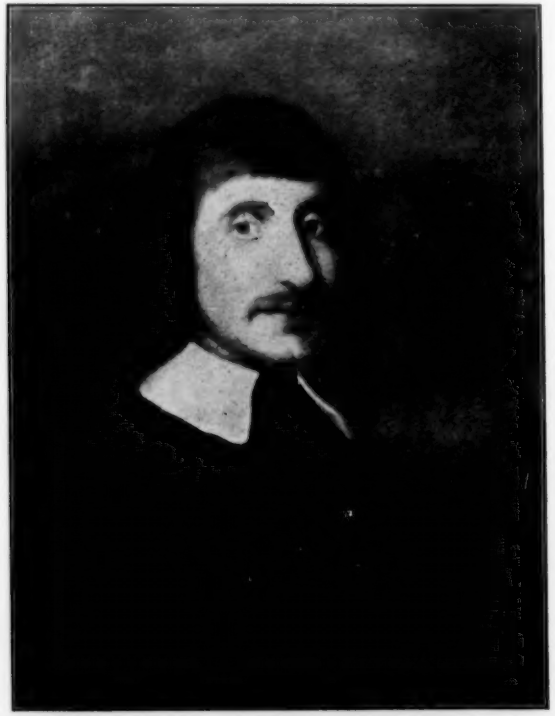

Fig. 1. JOHN WINTHROP, jr., as a young man, from a contemporary oil painting.

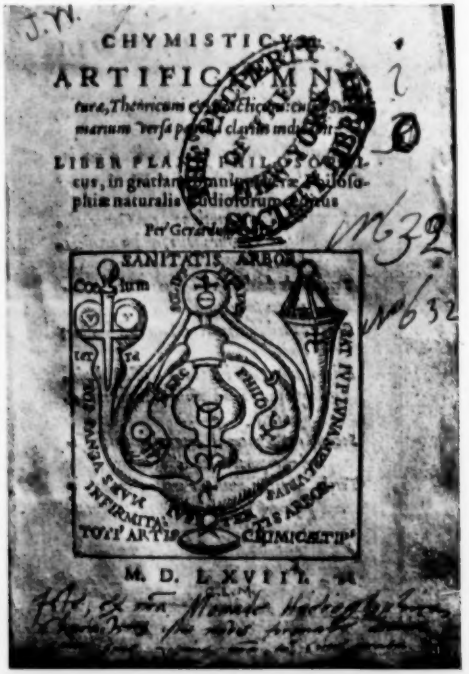

Fig. 2. Title page of *Chymisticum Aritficium* of GERARD DORN (1568) with autograph initials and annotations of Dr. JOHN DEE.

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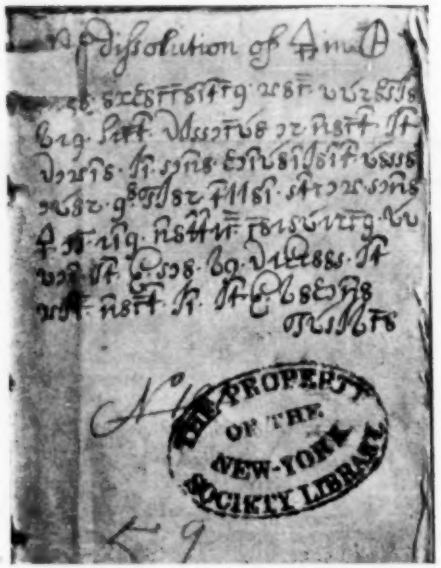

Fig. 3. Secret alchemistic recipe for dissolving sulphur in vitriol on blank page of *Cheiragogia Heliana*.

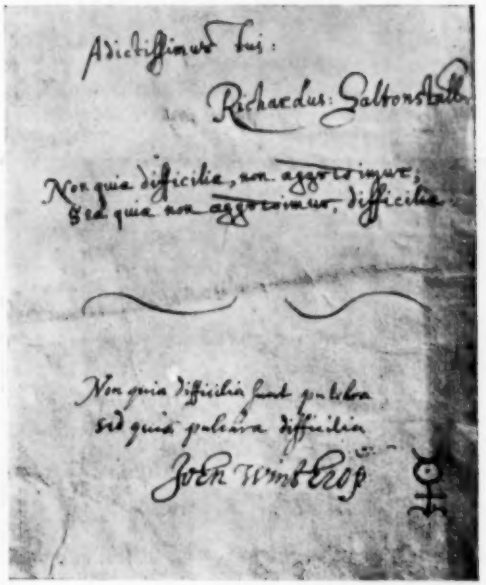

Fig. 4. Autographs and Latin annotations by RICHARD SALTONSTALL and JOHN WINTHROP, jr., on blank page of NORWOOD's *Trigonometria*. WINTHROP has attached to his signature the monadic emblem of Dr. DEE.

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indicated by a division of his books in the Society Library according to language; 133 of them, or practically one-half, are in Latin, 71 are in English, 23 in German, 17 in French, 12 in Dutch, 7 in Italian, 4 in ancient Greek and 1 in Spanish. Latin was the international means of scientific communication in WINTHROP's time and his command of this language was such that he not only read it with ease but used it for his foreign correspondence and for private notes. Among the WINTHROP books is a copy of the « Janua Linguarum Reserata » of that famous humanist J. A. COMENIUS (1592-1671) with whom WINTHROP corresponded and whom he is reported by tradition to have once approached for the purpose of offering him the presidency of Harvard College. The method of COMENIUS was to teach Latin and other tongues by giving, in parallel columns, sentences in the vernacular and language to be taught which conveyed useful information in the form of dialogues upon the facts of everyday life. He was one of the first to advocate the teaching of science in schools and in his « Janua Linguarum » are conversational dialogues upon geometry, arithmetic, astronomy, optics, medicine and other sciences. No better method has been devised for gaining colloquial use of a foreign language.

WINTHROP's major interest in science, as indicated by the catalogue of his library, was in chemistry. It is impossible here to enumerate all the titles of his books in this field. Nearly all the old writers are represented, ARTEPHIUS, ARNALDUS, BASIL VALENTINE, CEPHALUS, CROLL, DORN, FLAMMEL, GLAUBER, HAPELIUS, LIBAVIUS, LULLY, MAIER, PARACELSUS, RULAND, SUCHTEN and many others. Some of these books WINTHROP brought with him from England, others were added after his arrival in America. His scientific friends in England and in Europe kept sending him books and book catalogues. This is shown, for example, in an old bill submitted by his friend, FRANCIS KIRBY, in March, 1633, (the first recorded bill for a shipment of chemicals and chemical apparatus to America) at the bottom of which is mentioned the sending of 3 book catalogues.

Fortunately for the antiquarian the younger WINTHROP made annotations in some of his books regarding the previous owners of his volumes, many of whom have left their autographs and notes upon the pages.

Two of the most interesting books in the WINTHROP collection are a pair of thin quarto volumes, one in paper and the other bound in vellum, written by PARACELSUS. The first is « Das Buch Meteororum» composed, as the title indicates, in that queer mixture of German and Latin of which PARACELSUS was so fond, and published at Cologne in 1566. The other is the little German « Baderbüchlein », of 6 treatises on baths, published at Mülhausen in 1562. It bears at the top the autograph « JOHANNES DEE 1562 » and in the middle a note in Latin signed with DEE's initials « Agi, hic assero, non de vulgaribus solum Balneis sed de secretissimis etiam Philosophorum Thermis. J.D. », which is to the effect that the reader must consider not only such baths as are ordinarily understood but also those most secret thermal baths which are known only to the philosophers.

On the front fly leaf of this volume is a copy in Dr. DEE's handwriting of the table of contents of the nine books of PARACELSUS, upon the Mysteries of Nature. Below this in the handwriting of WINTHROP is the following note :

« This above written and the name on the top of the frontisspiece of this book, and the note in the middle of the frontisspiece and the several notes in the margent through the whole booke, was written by that famous philosopher and chimist JOHN DEE, with his owne hand. This J. DEE was he that wrote the philosophicall treatise called Monas Hieroglifica, also Propaideumata Aphoristica, also the learned preface before EUCLIDES Elements in English in folio. He was warden of Manchester. I have divers bookes that were his wherein he hath written his name and many notes and for which they are worthyly the more esteemed. »

« July 25, 1640. JOHN WINTHROP. »

The margins of this book bear many annotations both in English and Latin in Dr. DEE's handwriting. One page containing the short second chapter of the fourth treatise upon the transmutations produced by water contains marginal references in Latin to underlined passages in the text « ferrum in cuprum », « lignum in lapidem », and « ex sale gemma », while at the bottom in English is the note :

« In England at Knaresborough, by Wetherby in York Shyre is a well by the river syde which in the space of a wynter turneth any wood to stone. »

The four-hundredth anniversary of the birth of Dr. DEE has just been celebrated. He was born in 1527 and died in 1608, having won great fame as a mathematician, astrologer and alchemyst; in the latter capacity he spent some time at the Court of RUDOLPH II of Bohemia. Dr. DEE was the author of over fifty works upon geometry, navigation, alchemy and other subjects. A good life of him has been written by CHARLOTTE FELL SMITH. He died in poverty and his life, filled with romantic adventure, will always be of interest to students of the history of science.

Another book of Dr. DEE, which WINTHROP acquired, is the « Chymisticum Artificium » published by GERARD DORN, in 1568, Its title page (fig. 2) bears an emblematic diagram showing various combinations of the symbols of alchemy, iron-copper-gold upon the left, gold-tin-silver at the top, and lead-tin-silver-mercury at the right. In the centre of the diagram is a composite character of all seven symbols. Dr. DEE, whose initials, J. D., appear at the top of the page, has written at the bottom in Latin that DORN took these new symbols out of his Monas Hieroglyphica (published in 1564) and forgot to mention the fact or to give him credit. As a simple convenient sign which symbolized the whole art and mystery of alchemy, this monadic emblem of Dr. DEE enjoyed a wide popularity, and it was used as a private book mark by the younger WINTHROP (see fig. 4).

Another volume in the WINTHROP library,consisting of a collection of alchemistic treatises by FLAMMEL, ARTEPHIUS and PONTANUS, published at London in 1624, is of particular interest as it was once borrowed from Connecticut's first Governor by JOHNATHAN BREWSTER, the son of Elder BREWSTER of Mayflower fame. In a letter dated January, 1656, BREWSTER writes to WINTHROP as follows :

« The many signs given in this booke I really fynd trew — some opperations which before I understood not, now I do by ARTEPHIUS' booke, as the head of the Crowe, Virgine's Milke, etc. — I may say with ARTEPHIUS (page 200) it is of a work soe easy and short, fitter for women and young children than sage and grave men. — I would have kept this booke longer but your letter to me desyres to have it sent spedily and carefully and therefor, having this opportunity, I could retaine it no longer. »

As we verify the many references which BREWSTER made to the pages of this little volume, we are carried back irresistibly

to the early time when this son of Plymouth's famous elder, at his trading port of Mohican in the Connecticut Colony, set out to discover the Philosopher's Stone with the hostile Indians howling outside his door.

Another interesting association book in the WINTHROP collection is a small duodecimo volume, bound in leather, containing two works by that mythical writer of alchemistic tradition, BASIL VALENTINE. One is entitled « Von den Naturlichen und obernaturlichen Dingen, » published in 1624; the other « De Occulta Philosophia, » published in 1603. The fly leaves of this old volume are much annotated. On the last blank page is a note by WINTHROP, in Latin, German and English, respecting other works by BASIL VALENTINE, but the most interesting annotation is the one penned by WINTHROP upon the first fly-leaf.

« This was once the booke of that famous philosopher and naturalist, CORNEL. DREBBEL, who usually carried it with him in his pockett and after his death was given me by his sonne-in-law, Mr. ABRAM KEFFLER
JOHN WINTHROP. »

The associations of this old book not only with WINTHROP but with CORNELIUS DREBBELL and ABRAHAM KEFFLER are most interesting. The memorandum is only one of many examples of the extent of WINTHROP's acquaintance with the scientists of his day.

In the library of the Massachusetts Historical Society there is a letter to WINTHROP by the ABRAHAM KEFFLER above mentioned. It is dated June 12, 1639, and reads in part as follows :

« I know you desirous to heare of my prosseeding in Alchimie; all my proseeding therin is lost, by reason of my long sicknes, so that I am now beeginning agayne » — « I now onely follow dieing of scarrllett, in which I have so much to doe that I can follow nothing elles ».

This old letter of KEFFLER to his friend WINTHROP, with its reference to the « dieing of scarrlett, » recalls one of the most interesting discoveries ever made in the technology of dyeing. The account of it, as given in BECKMANN's « History of Inventions, » is as follows :

« The well-known CORNELIUS DREBBEL, who was born at Alkmaar, and died at London in 1634, having placed in his window an extract

of cochineal, made with boiling water, for the purpose of filling a thermometer, some aqua regia dropped into it from a phial, broken by accident, which stood above it, and converted the purple dye into a most beautiful dark red. After some conjectures and experiments, he discovered that the tin by which the window frame was divided into squares had been dissolved by the aqua-regia, and was the cause of this change. He communicated his observation to KUFFELAR, an ingenious dyer at Leyden, who was afterwards his son-in-law. The latter brought the discovery to perfection, and employed it some years alone in his dye-house, which gave rise to the name of Kuffelar's colour. BECHER calls him KUFFLER; KUNKEL, in a passage which I cannot again find, makes his name KUSTER, and says that he was a German. In the course of a little time the secret became known to an anabaptist called GULICH, and also to another person of the name of VAN DER VECHT who taught it to the brothers GOBELINS in France. »

With this story in mind it is with a strange quickening of interest that we turn the leaves of the ancient volume which CORNELIUS DREBBEL once carried in his pocket. DREBBEL is credited by some with the invention of the modern form of the thermometer and of other apparatus. He wrote two books, one upon the « Nature of the Elements » and the other upon the « Quintessence ». Like Dr. DEE, he was a practising alchemist and, like Dr. DEE, gave exhibitions before RUDOLPH II. of Bohemia and other sovereigns of Europe.

An old, paper-covered duodecimo volume among the WINTHROP books is entitled « Cheiragogia Heliana, » which was a famous work in its day owing to the belief that it pertained in some way to that great Messiah of Alchemy, ELIAS THE ARTIST. One of WINTHROP's chemical friends, Dr. ROBERT CHILD, of whom a very interesting biography has recently been written by Prof. KITTREDGE of Harvard University[1], wrote to him in May, 1648, that ELIAS THE ARTIST had actually been born according to communications from the brotherhood of Rosicrucians, but that he was not of the English nation. Upon the front fly-leaf of this « Cheiragogia Heliana » is written a heading « Ye Dissolution of ♁ in ⊕ » beneath which are seven lines in a secret character (fig. 3). Cyphers such as this, but with different characters, are frequently noted

(1) Boston, 1920. See Review in *Isis*, 9, 440-45.

in the letters and correspondence of the younger WINTHROP, who was greatly interested in the subject of cryptography. In a letter written to his friend, Dr. ROBERT CHILD, in March, 1648, he requests him to procure a copy of BLAISE DE VIGENIRE's « Traite des Chiffres ou Secrète Maniere d'Ecroire. » EDWARD HOWES, another friend who supplied WINTHROP with chemicals and chemical books from England, sent him in one letter a new secret alphabet, in which the characters resemble the lines and curves now employed in stenography. In other letters to WINTHROP, HOWES used a cypher in which artificial words were used, the true word being found by taking the odd numbered letters of the substitute. The methods of secret writing employed by our colonial ancestors is a subject upon which much could be written.

In his correspondence upon chemical subjects and in his private notebooks WINTHROP made extensive use, as did all his contemporaries, of the symbols of alchemy. The characters employed are identical with those printed in the « Basilica Chymica » of OSWALD CROLL, one of the books in the WINTHROP collection.

One other chemical book of the library of WINTHROP to which I wish to refer on account of its associations is the « Antimonii Mysteria Gemina » by ALEXANDER VON SUCHTEN. At the top of the title page is the inscription « ROBT. CHILD, his booke, 1656, » and at the bottom the signature of WINTHROP's grandson with Dr. DEE's monadic emblem. This is in fact one of the numerous scientific books which Dr. ROBERT CHILD sent to WINTHROP during the course of their long friendship. In a letter written in 1641 he mentions sending him FABRE's « Alchymista Christianus» ROCHA's « Des Eaux Minerales, » the « Arcana aperta » and other books from his library. He also writes « I have sent you a catalog of my chemical bookes; if you like them, they are at your service. » It was my good fortune in 1921, while examining various unpublished WINTHROP papers in the Massachusetts Historical Society library to discover this catalog of Dr. CHILD's Chemical Books, which had always been regarded as lost. It contains 114 items, arranged in 4 columns, the first column having at the top the words « Libri Chymici quos possideo. » The books are classified according to language under the 5 headings Germanici, Italici, Gallici, Anglici and Latini. While this document does not bear Dr. CHILD's signature, its cheirography exhibits the

same peculiarities shown by his letters and it was written by him beyond all doubt. A further proof is the presence in this list of various books, such as the « Arcana aperta, » « Alchymista Christianus, » « Des Eeaux Minerales » and others mentioned in CHILD's correspondence. The eleventh book of the first column (marked 9 by mistake), » SUCHTENIUS upon Antimony, » is without question the identical « Antimonii Mysteria Gemina » of ALEXANDER VON SUCHTEN, which is found in the WINTHROP books of the Society Library.

Another interesting book in the WINTHROP collection of the Society Library is GEORGE STARKEY's « Natures Explication and Helmont's Vindication ». STARKEY was a graduate of Harvard College in the class of 1646 and this book deserves to be remembered as the first chemical treatise published by an American college graduate. STARKEY spent the last years of his life in London where he died of the plague in 1665. He probably owed his initiation into the study of chemistry to Connecticut's first Governor and in the Massachusetts Historical Society is an interesting chemical letter, written by STARKEY to WINTHROP at his home in Pequot or New London, which reads as follows :

« To the Worshipful Mr. JOHN WINTHROP at his house at the Pequot these. Sir : — After my hearty respects, greeting. Your love hath soe far ingaged me to you, that I cannot but take this opportunity of writing unto you. I hope you are in health, with al yours. I heare you shortly intend to come to the Bay; if by water, if you could spare any ♃ and ☿, I should content you for it & rest ingaged. If you could spare one or two of your greater glasses, you would doe me a great pleasure. I wish, if you could find HELMONT de Febribus, I might borrow him of you, as also de Lithiasi, also the little booke intituled Encheiridion Philosophiae restitutae, with Arcanum Philos. at the end of it. If your Worship would be pleased to remember the keyes of the cabinets wherein your bookes are, I should count it an extreame felicity once to have the view of chemical bookes, which I have not read a long time. Theatrum Chemicum I should chiefly desire. I have built a furnace, very exquisitely, but want glasses, ♃ & ☿. Mr. BARKLY is gone. This day two ships arived from London, bringing sad newes, especially in London, particulars I know not, being not at home. Thus hoping the continuance of your Worship's friendship, I rest

Yours in al service

« Aug. 2, 1648. » GEO. STARKEY. »

It must not be inferred from the large number of treatises upon alchemy in the WINTHROP collection that the interests of the younger WINTHROP in chemistry were purely of a visionary character. He was, in fact, an intensely practical man, and did much towards the establishment of infant chemical industries, such as those of iron, salt, and gunpowder, in the New England colonies. This interest is indicated in a vote of the General Assembly of Connecticut in 1651 which awarded to WINTHROP and his heirs any « mines of lead, copper or tin, or any minerals as antimony, vitriol, black lead, allum, stone salt, salt springs, or any other the like » within its jurisdiction, which he might discover and maintain. It is also indicated in WINTHROP's papers and correspondence which are filled with references to tar, pitch, potash, indigo and other products of chemical industry. One of these documents is a proposal in WINTHROP's handwriting to the merchants of Boston to form a stock company for manufacturing saltpeter.

« Upon long observation and after hearing the complaints of the difficulty of these Colonies for want of returnable merchandise, having had very serious consideration about the raising of some staple fitt for returnes and being as well satisfied of the probability as of the necessity and usefulnesse thereof : I thought fitt to make knowne something of my positive thoughts about the same, w^{ch} are to this effect. That upon good and demonstrative grounds it appeares to me that some very usefull and staple comodotee may be produced in N: England, w^{ch} may advance the traffick of the country, by making returnes thereof fro hence. And because a profitable way thereof canot be so well demonstrated to the full satisfaction of others as by the thing it selfe in some degree compleately effected, w^{ch} cannot be done wtht out a considerable stock, I thought it therefore necessary to make this proposall to ingagement for the forwarding thereof, that if any desirous to promote a publique good, shall see cause to accomodate that businesse wth a stock of 3000 li or 4000 li I shall indeavour (God permitting) to raise such comoditie, as may be convenient for returnes, and in particular that staple of salt peter of which some ( ) of tunes are yearly carried into England, Holland, Portugall and other parts : and that no adventure of detriment may be to any, doe hereby ingage that the said stock wth-in ( ) yeares dully repaied to them, wth some convenient consideration (if God please to add a blessing to the designe so farre as it be profitably effected); and when it shall appeare demonstratively incouraging, they may, if you please, to joyne in the business and to a further proceeding, advance to a stock of 10000 or 20000 li or more. »

This memorandum of about 1650 is so far as I know the first proposal by a resident of the American colonies to promote an industrial stock company.

But the chief chemical interests of the younger WINTHROP, as might be inferred from his books by PARACELSUS and STARKEY, were along medical lines. He was in fact a chemical practitioner and his patients comprised all classes from sick Indians up to Colonial Governors. The appeals to him for medical aid were frequent and the preparation of remedies often kept him from other obligations. « I am now intent upon extracting nitre, » he writes his son, « and cannot think of any journey till that be accomplished. » According to COTTON MATHER, WINTHROP gave away his remedies « upon all occasions insomuch that wherever he came, the diseased flocked about him as if the healing Angel of Bethesda had appeared in the place. » Another picture of the philanthropic old Governor manufacturing medicines in his laboratory for the poor, holding the bellows in one hand and stirring the coals of his furnace with the other, has been left by a contemporary New England poet, BENJAMIN THOMPSON.

Records are preserved in WINTHROP's notebooks of the patients whom he treated and from these it appears that the principal chemical remedies which he used were saltpeter, antimony, tartar, copperas, white vitriol, sulphur, and iron, with occasionally a little calomel. In addition to the above, WINTHROP also prescribed red coral, powdered ivory, rosin, saffron, sassafras, aloes, balsam, rhubarb, and various simples of the Galenists, such as wormwood and anise.

The chemical remedies employed by WINTHROP are usually indicated in his letters and records by the old alchemistic symbols, the details of his cases being sometimes written in Latin. A mystery exists about some of his remedies, a secret alphabet being used to conceal particularly private information. This secrecy was especially marked as to the medicine called « Rubila » which was invented by WINTHROP and employed by him for treating ague, small-pox, worms, coughs, and other complaints. The fame of this remedy spread over all New England and even to Great Britain. Its composition has never been determined with certainty. According to Dr. OLIVER WENDELL HOLMES, it probably consisted of diaphoretic antimony, nitre, a little salt of tin and some substance for

« rubifying » or giving the mixture a red color. A paper found by me in the WINTHROP collection some years ago was stained with a red powder, which was perhaps Rubila, and this on microanalysis by Prof. CHAMOT, of Cornell University, was found to contain nitre and antimony sulphide.

Reference can be made to only a few of the many interesting medical books in the WINTHROP library. There are old copies of WECKER's « Antidotarium », of CAMPY's « Or Potabile », of DUNCAN LIDDEL's « Ars Medica » and « Tractatus de Dente aureo, » (which related to the prodigy of a Silesian boy who possessed a tooth of gold), of the « Responsio de Experimentis Anatomicis, » by THOMAS BARTHOLINUS, celebrated both as mathematician and physician, of the « Sylloges Memorabilium Medicinae » by J. R. CAMERARIUS, distinguished in both botany and medicine, and of the « Universa Medicina » by J. F. FERNEL, celebrated as mathematician, astronomer and physician, and who by his schemes for examining the urine and feeling the pulse sought to revise the diagnostic methods of the old Greek Medical writers. A book of special interest is THOMAS JOHNSON's English translation of the « Chirurgical Works » of AMBROISE PARÉ, who by his use of ligatures and other devices accomplished great reforms in surgery. PARÉ's book is remarkably free from the superstitious ideas of his time; this is well shown by his doubting the existence of the fabled unicorn, the horn of which was supposed to have remarkable curative powers. A so-called Unicorn's horn was in fact owned by the younger WINTHROP and lent by him to his ailing friends.

With respect to mathematics the WINTHROP collection contains a number of interesting books. There is a copy of the « Eratosthenes Batavus » by the Dutch astronomer and mathematician WILLEBRORD SNELL, who discovered the law of the refraction of light and who in 1617 estimated the length of a degree of a meridian to be about 67 miles. There is also a copy of the famous « Trigonometrie » by RICHARD NORWOOD, who by measuring the distance from London to York estimated in 1636 the length of a degree with an error of less than half a mile. This volume of NORWOOD's trigonometry is an interesting association book for it contains upon the front fly-leaf the autographic signature of RICHARD SALTONSTALL, one of the founders of the Massachusetts Bay Colony and an intimate friend of the WINTHROPS, with a Latin

epigrammatic couplet respecting the difficulties of NORWOOD's text (fig. 4). At the bottom of the page WINTHROP has written his signature with the usual DEE symbol and a modification of the Latin epigram which his friend had written above. Another valuable mathematical book in this collection is a copy of the first edition of JOHN NAPIER's « Mirifici Logarithmorum Canonis Descriptio » printed at Edinburgh in 1614, a work which in the history of British science has been regarded by some as only second to NEWTON's Principia. Bound in with this is a copy of the 1615 edition of the « Opticae » of FREDERICK RISNER. On a black fly leaf of this volume is written the name of ADAM WINTHROP (JOHN WINTHROP, Jr.'s grandfather) and the date 1619. After passing through seven generations of the WINTHROP family the book has remained for over 100 years in the Society Library and is without question the most valuable of all the scientific books in the WINTHROP collection. Passing over the interesting and famous « Recreations Mathematiques » of JEAN LEURECHON, I wish to refer to another interesting association mathematical book of the WINTHROP library, the « Mysterium Arithmeticum » which bears upon the margin of the title page the signature of WINTHROP's intimate scientific friend, EDWARD HOWES. As the title shows, the work deals with the mystical and symbolic properties of numbers and refers specifically to the Fraternity of the Rosicrucians and to the number of the Beast in the Apocalypse. There are numerous references in WINTHROP's correspondence to the Rosicrucians and various books in his library relate to this fraternity and to its mythical founder, CHRISTIAN ROSENCREUTZ.

The WINTHROP library contains several interesting books upon physics, particularly upon optics, such as CHRISTOPHER SCHEINER's « Oculus », J. B. PORTA's « De Refractione Optices », JOHN FLEISCHER's « De Iridibus Doctrina » and an old work entitled the « Isagoge Optica » bound in the parchment pages of an old Latin Psalter, a reminder perhaps of the dissolution of the monasteries under HENRY VIII. Another treatise upon physics in the WINTHROP collection is the Italian work entitled « Le Mechaniche » by GUIDO UBALDO DEL MONTE, celebrated as the early patron of GALILEO. The title page of the volume bears the autograph of WINTHROP with the date 1631 and the customary Monadic symbol of Dr. DEE, which WINTHROP used as a private mark.

The younger WINTHROP was a great lover of astronomy. He possessed a 3½ foot telescope with which he delighted to explore the heavens and in a remarkable letter written to Sir ROBERT MORAY, President of the Royal Society, from Hartford on January 27, 1664, he tells of seeing 5 satellites of Jupiter, but distrusting his observation asks that it be confirmed. His correspondence contains many references to his astronomical observations. In a beautiful letter, to Dr. BENJ. WORSLEY, dated Oct. 27, 1670, he writes « I seldom looke upon the constellations of the heavens or the planets, especially Jupiter, with my telescope, or the glorious constellation of Orion, but the grateful memory of yourselfe is fresh to my thought and soule. » Shortly after this, he donated his little telescope to Harvard College and it is interesting to know that this was the earliest astronomical instrument which Harvard is known to have possessed. Curious to know what use was made of his gift, he writes in April, 1672, to his son « I desire to know whether they could see those satellites about Jupiter at any time by the telescope at the colledge and the moone or any of those things. »

It is only natural, therefore, that the library of the younger WINTHROP should contain numerous works upon astronomy. A volume of special interest among the books at the Society Library is JOHN KEPLER's treatise, « De Stella nova in pede Serpentarii » published at Prague in 1606. This was the brilliant star which appeared suddenly in September, 1604, and remained visible for seventeen months. KEPLER attached a mystical significance to the appearance of this star with a triple conjunction of Mars, Jupiter and Saturn which occurred at the same time. Among other astronomical books in the collection may be mentionned KEPLER's interesting little essay of 34 pages (Prague 1610), entitled « Dissertatio cum Nuncio Sidereo » with reference to GALILEO's recent discoveries, and bound in with this is KEPLER's « Eclogae Chronicae », published at Frankfort in 1615. There are also the « De Principiis Astronomicae », published by GEMMA FRISIUS in 1578, the « Cosmographie » of DENIS HENRION, published at Paris, 1620, and the « Ephemeris Perpetua », or astronomical almanac of JACOB ROSIUS, published at Basel in 1628. But the astronomical work of greatest value in the WINTHROP collection is the first edition of TYCHO BRAHE's famous « Astronomicae instauratae

mechanica », published at Wandsbeck in 1598. It is a large folio volume giving a description of the astronomical instruments which TYCHO employed, with an autobiographical sketch of his life and discoveries.

Of the miscellaneous scientific books in the WINTHROP collection I can refer to only a few. A volume of peculiar antiquarian interest is the « Bergpostilla », or metallurgy, of JOHANN MATHESIUS published at Nuremberg in 1578. It is a folio volume of 226 leaves describing the processes of treating the ores of various metals and minerals. The book is permeated throughout with a vein of mysticism and piety, there being included various prayers and hymns to be employed in the dangerous operations of mining. Mining was a subject in which Winthrop was greatly interested and he operated mines in New England for the production of ores of iron, blacklead and other minerals. He was a collector and assembled a small museum of minerals, fossils, ores and other natural curiosities which remained intact down to the Revolution. Among the WINTHROP papers in Boston is a letter which WINTHROP wrote to Prof. SCHLEGEL, of Hamburg, soliciting specimens of various minerals and from which a brief extract is quoted as an example of his style in scientific Latin.

« Hoc tantum a te hac vice preto ut mihi aliqua mineralia ex Germania acquireres, praecipue mineral Argenti, vel Argentum rubrum translucidum, Germanice Rotgulden-Ertz et Glase-ertz, et, si haberi possint, mineral plumbi candidi vel stanni et lapidem ex quo, plumbum excoquitur Goslariae. »

WINTHROP's interest in specific phases of mineralogy is shown by his possession of the « Paradoxes ou Traittes Philosophiques des Pierres » published at Paris in 1635 by ESTIENNE DE CLAVE.

There are also in the WINTHROP library a considerable number of books dealing with the general subject of natural history, or science in its various aspects, such as the « Natura loquax » of FREDERICK CASANDER, published at Frankfort in 1630, the « Nouvelle Lumière Philosophique », of ESTIENNE DE CLAVE, published at Paris in 1641, the famous « Synopsis Physicae ad Lumen divinum Reformatae », published at Amsterdam in 1645 by J. A. COMENIUS and in which this early popularizer of science incorporates various physico-theological theories of his own, and

the very readable « Discours admirables de la Nature », published at Paris in 1580 by the celebrated French potter and scientist BERNARD PALISSY, whose sane opinions upon the follies of alchemy and other superstitions mark him as a man a century or more in advance of this time.

As one who had made the long translatantic trip four times from England to America and three times in the opposite direction the younger WINTHROP was naturally interested in the science of navigation, and we find in his library various books which deal with this subject, such as « La Mecometrie de l'Eymant » of GUILLAUME DE NAUTONIER, published in 1601, a work dealing with the construction of the compass, and its employment in navigation. But the book of greatest interest in this connection is MERCATOR's « Altas Minor », published by the wellknown house of JODOCUS HONDIUS, of Amsterdam, in 1607. HONDIUS had only a few years previous to this date bought the old plates of MERCATOR's original Atlas and the present volume is a much enlarged edition of that work. The antique character of the maps is shown by a chart of the Western Hemisphere, upon which the Great Lakes and many other geographical features are lacking while Lake Parima, of South America, and numerous other mythical places, are inserted. The degrees of longitude were measured eastward from the Canary Islands, according to the old method of PTOLEMY.

In books dealing with the occult sciences the WINTHROP library, as might be expected from the period in which it was assembled, is peculiarly rich. In addition to the books upon alchemy previously mentioned, there are numerous works upon astrology, among them a « Table of the 12 Astrological Houses, » published at London in 1654, and consisting of numerous blank diagrams, some of them filled in as shown by the horoscope of ALICE WILKINS with positions of the planets on January 11, 1656, and notes of her illness. The handwriting is not that of WINTHROP and as the horoscopes are all calculated for the latitude of London the book as annotated was probably sent to him by some English friend. Other WINTHROP books dealing with the occult are the « Astrologia aphoristica », published at Ulm in 1641, the « Monochordum Mundi », and other works of that famous Mystic, ROBERT FLUDD, concerning whose books there are many references in

WINTHROP's correspondence. Of particular interest is « The Triall of Witchcraft », published by JOHN COTTA at London in 1616. The younger WINTHROP died 15 years before the witchcraft persecutions at Salem and there is no evidence from his correspondence that he took an active interest in the subject.

The scientific atmosphere of the seventeenth century was heavily charged with mysticism; it entered even into such matter-of-fact treatises as MERCATOR's « Atlas », in WINTHROP's volume of which is an allegorical illustration, with Biblical allusions, of the destiny of man. It is impossible to understand or to interpret the scientific spirit of the wonderful age, in which the younger WINTHROP lived, without a proper understanding of this influence which, however baneful it may have been in some of its manifestations, gave a stamp of dignity and purpose to all that was accomplished.

The younger WINTHROP was one of those who transplanted science from the Old World to the New. He corresponded with most of the eminent personages of his time including such men as BOYLE, CLARENDON, CROMWELL, DIGBY, GLAUBER, HARTLIEB, HELMONT, KEPLER, KEFFLER, MILTON, NEWTON, OLDENBURG, Prince RUPERT, STARKEY, WREN and scores of others. It would be of interest, if space permitted, to discuss his connection with the Royal Society and his extensive correspondence with its various members, much of which has fortunately been preserved and all of which is of the greatest scientific interest. The letters treat of such topics as the tides, the refining of gold, the making of pitch and tar, the manufacture of potash and salt, the malting of maize, deep-sea sounding, curious flights of insects, meteors, and countless other subjects. WINTHROP's life was remarkably rich in experiences and contacts; his long career of public service prevented him from giving as much attention to science as he would have liked and yet there was very little of the science of his time with which he was not familiar. His books and correspondence are an invaluable aid to those who would seek out the origins of science in America.

(*U. S. Department of Agriculture, Washington, D. C.*)

C. A. BROWNE.

APPENDIX

GENEALOGY OF SOME BRANCHES OF THE WINTHROP FAMILY

ADAM WINTHROP (1498-1562)
|
ADAM WINTHROP (1548-1623)
|
JOHN WINTHROP (1587-1649)
(Founder of Boston, Governor of Massachusetts Colony.)
|

JOHN WINTHROP, JR., F. R. S. (1606-1676)
(Founder of New London, Governor of Connecticut Colony).

FITZ-JOHN WINTHROP (1638-1707) (Governor of Connecticut Colony)

WAIT WINTHROP (1642-1717)
|
JOHN WINTHROP, F.R.S. (1681-1747), (Harvard College, 1700).
|
JOHN STILL WINTHROP (1720-1776), (Yale College, 1737).
|

FRANCIS B. WINTHROP (1754-1817), (Donor of JOHN WINTHROP, Jr.'s books to Society Library of New York.)

ADAM WINTHROP (1620-1652)
|
ADAM WINTHROP (1647-1700)
(Harvard College, 1668).
|
ADAM WINTHROP (1676-1743)
(Harvard College, 1694).
|
JOHN WINTHROP, L.L.D., F. R. S., (1714-1779).
(Harvard College, 1732; Hollis Professor of Mathematics and Natural Philosophy.)

THOMAS L. WINTHROP (1760-1841)
|
HON. ROBERT C. WINTHROP (1809-1894), (Donor of WINTHROP Papers to Massachusetts Historical Society).

Fig. 1. Spalato vue de la mer.

Adì il Agosto
Entra per la Porta San
GRATIS.
Si concede a
Che possa alloggiare il sopraddetto per tre Notti
Si proroga per
Dall' Ufizio in Comune li
1787.
Quel Forestiere ricevuto che avrà questo Bollettino alla Porta, per cui sarà entrato, dovrà col medesimo presentarsi all' Ufiziale, che sta in Comune, il quale sottoscrivendolo, gli concederà l' alloggiare per tre Notti, passate le quali, e volendo di più trattenersi in Città, dovrà di nuovo presentarsi, per ottenerne la Proroga, all' Ufiziale medesimo, dal quale secondo il solito le verrà concessa; Dovendo però portar sempre addosso il Bollettino presente, e nel partire di Città, esibirlo all' Ufiziale di quella Porta, per la quale uscirà; Avvertendo, che se sarà negligente nell' adempire a tutto ciò, sarà punito con pene pecuniarie, e Corporali ad arbitrio a norma de Bandi, secondo la qualità del Caso, e della persona delinquente, nelle quali incorrerà quello ancora, che non dicesse il vero suo Nome, Cognome, Patria. Uscì per Porta
Questo dì
1787.

Fig. 3. Laissez passer de M. T. BRÜNNICH.

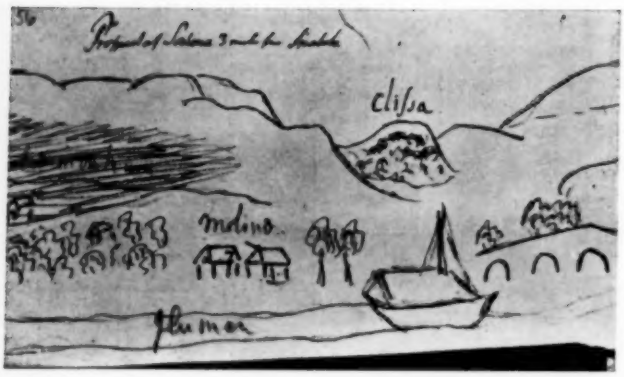

Fig. 2. Salona.

Fig. 4. Médaille d'honneur du général CICAVI
J. W. S. JOHNSSON.

UNIV OF MICH

La Peste de 1763 en Dalmatie.

G. C. P. Cicavo :

Relazione della Peste insorta l'anno 1763 nei Borghi di Spalato con il Progetto dell'Autore per diffendere la Dalmazia dai successivi Attachi del Morbo contagioso.

Ms. de la Bibliothèque Royale de Copenhague.

I. Introduction.

On connaît bien l'existence de la petite épidémie de peste qui éclata en 1763 dans les faubourgs de Spalato, sans pénétrer jamais dans la ville elle-même; mais aucune description de l'évolution et du cours de la maladie n'a été trouvée jusqu'ici, et aucun document ne semble avoir été publié à son sujet. Il est certain qu'une description détaillée de l'épidémie ne saurait être facilement donnée, alors que les documents nécessaires se trouvent dispersés dans différentes archives en Italie et en Yougoslavie et que les documents turcs sont inaccessibles.

Aussi, essayerai-je seulement de préciser ce que l'on sait présentement de cette épidémie, en publiant un Ms. sur la peste de 1763, conservé à la Bibliothèque Royale de Copenhague. Mais tenter une pareille édition avec la seule documentation qu'on peut trouver en Danemark sur la Dalmatie aurait été chose impossible, si la fondation *Rask-Örsted* ne m'avait alloué une subvention pour la copie des documents lointains. Aussi je prie l'honorable Direction de cette fondation d'agréer mes remerciements les plus cordialement respectueux. J'ai également envers la direction d'une autre fondation, celle de *Carlsen-Lange* une dette de reconnaissance pour une autre subvention, qui m'a permis de parcourir toute la Dalmatie, d'y faire des recherches dans les archives de Zara, Spalato et Raguse, et de visiter personnellement maints lieux mentionnés dans le manuscrit en question et dans les documents.

Je tiens beaucoup à remercier Monseigneur le Prof. Dr. Fr. Bulič, qui, pendant mon séjour à Spalato, m'a procuré des renseignements, que, sans lui, je n'eusse jamais obtenus. Je prie encore mon collaborateur,

le Dr. ANTONIO KREKICH, de Zara, d'agréer ma profonde gratitude pour ses recherches infatigables dans les Archives de l'État, dont il est l'archiviste.

J. W. S. JOHNSSON.

En 1765, après avoir été chargé d'un cours des sciences naturelles à l'université de Copenhague, MORTEN THRANE BRÜNNICH (1) fit un grand voyage, qui le conduisit en France et dans les pays méditerranéens en passant par l'Angleterre. D'Italie, il se rendit en Dalmatie et rentra à Copenhague, après avoir parcouru la Hongrie, la Transsylvanie, et l'Allemagne. Le but de son voyage était de se livrer à des travaux étendus d'Histoire naturelle. En Danemark il était déjà connu pour ses recherches entomologiques (*Prodromus insectologiae Siaellandicae*, 1761 ; *Entomologia*, 1764 (2)) et ornithologiques (*Edderfuglens Beskrivelse*, 1763; *Ornithologia borealis*, 1764); mais pendant son voyage, la faune de la Méditerranée éveilla son interêt (*Ichthyologia Massiliensis* et *Spolia maris Adriatici*, 1768), et il se livra aussi à des études géologiques assez approfondies. Ainsi visita-t-il les mines de la Cornouaille et les usines de Hongrie, de Transsylvanie et d'Allemagne. Le Danemark lui fit l'honneur mérité de le nommer Professeur de sciences naturelles quelques mois avant son retour. En novembre 1769 il devenait membre de la Société danoise des Sciences.

Il existe encore de nos jours beaucoup de souvenirs de l'activité scientifique de M. T. BRÜNNICH. Bien que sa bibliothèque ait beaucoup souffert de l'incendie de Copenhague en 1795, on conserve encore une assez grande partie de ses livres et de ses manuscrits. La plupart de ces derniers — environ 200 tomes — forment la *Fondation Brünnich* de la Bibliothèque universitaire de Copenhague; un manuscrit seulement est gardé à la Bibliothèque Royale en raison de son contenu médical. C'est justement de ce dernier qu'on traitera ici; il décrit l'épidémie de peste de 1763 à Spalato.

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(1) MORTEN THRANE BRÜNNICH, (Copenhague 1737.09.30 — 1827.09.19) fut candidat en théologie en 1760 et fonda un musée d'histoire naturelle en 1770. Il fut nommé membre du collège des usines en Norvège en 1784, commissaire en chef des usines à Kongsberg, Norvège en 1778, mais s'en retourna à Copenhague en 1814.

(2) Le premier grand travail de zoologie, écrit en danois.

On voit par le Journal de BRÜNNICH (3) que la traversée d'Italie en Dalmatie fut pénible. Il s'embarqua à Ancône le 29 septembre 1767 payant 3 sequins pour son transport à Spalato et sa nourriture à bord. La mer devenant trop difficile, le navire, après avoir parcouru cent lieues, dut à cause de la tempête s'ancrer devant l'île de Melada au nord de l'Isola grossa, et ne put reprendre sa route que le 1 octobre. On mit cinq jours pour arriver à Spalato (4). BRÜNNICH a tracé dans son journal une petite esquisse de cette ville, vue de la mer, et il écrit que « les Lazarets » près de la mer sont la chose qui attire le plus l'interêt du voyageur (cf. planche 5, fig. 1.) Il dit aussi que ces lazarets sont destinés aux caravanes, qui arrivaient tous les mardis et vendredis et comprenaient souvent jusqu'à cent chevaux ou plus, chargés de fer, de cire, de maroquin, de coton et autres marchandises dont Spalato faisait commerce avec Venise, Trieste, Ancône et d'autres villes du littoral adriatique.

A Spalato — BRÜNNICH emploie toujours le nom de Spalatro, tel que les habitants le prononcent — il logeait chez JOHANNES LUCAS GARAGNINI, archevêque de la ville, dans son palais au nord de l'Église cathédrale (mausolée de DIOCLÉTIEN), l'archevêque s'étant retiré à la campagne à Castelli. Notre voyageur y demeura jusqu'au 19 octobre, date à laquelle il partit pour visiter les autres parties de la Dalmatie (5). Il se rendit alors à Zara où il fit connaissance d'un certain général CICAVO (6), homme « de beaucoup d'export (7) mais d'une religion de son invention ». Ce général presenta à BRÜNNICH le manuscrit reproduit ci-après; c'est pour-

(3) BRÜNNICH, M. T., *Noget om mit Levnets Löb fra Aar* 1737 *til Aar* 1769 (Ms. de la Bibliothèque universitaire, Fondation Brünnich nº 40, 4º). La biographie se trouve aussi dans la même Fondation nº 39, mais les deux textes ne sont pas identiques. Nous avons recouru à l'un et à l'autre.

(4) *l.c.* p. 56.

(5) BRÜNNICH montra sa reconnaissance à son hôte en dédiant les *Spolia maris adriatici* à l'archevêque. Dans le Ms. nº 39, il regrette que la dédicace ne comprenne pas tous les titres du haut personnage, qui sont : *archiepiscopus Spalatensis olim Salonitanus Dalmatiae ac totius Croatiae Primas.*

(6) CICAVO, GIOVANNI CARLO PAGANELLI était son nom. Les dates de sa naissance et de sa mort sont inconnues. Dans les Archives de Zara se trouve une lettre ducale (*Atti del Prov. Gen. Antonio Renier*, 1766-1768, I, c. 110), datée de Zara le 12 Xbris, indictione Vta, 1766, dans laquelle CICAVO est nommé gouverneur militaire de la Place de Zara. En 1769 CICAVO était sergent major de bataille, domicilié à Cattaro.

(7) de beaucoup d'export, c.a.d. qui se donnait de belles manières.

quoi on souhaiterait plus amples renseignements sur leurs relations, mais le journal dit seulement que CICAVO « avait entendu parler du voyage de NIELS KLIM (8) et désirait beaucoup lire ce livre ». C'est tout ! Cet entretien sur NIELS KLIM est probablement dû au fait que BRÜNNICH poursuivait des études géologiques en Dalmatie et se pouvait ainsi comparer au héros du voyage fantastique de LUDVIG HOLBERG, qui traverse la croute terrestre pour pénétrer à l'intérieur du globe. BRÜNNICH quitta Zara le 18 novembre pour se rendre à Pola où il arriva trois jours plus tard.

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Le Ms. que le général CICAVO donna à BRÜNNICH porte le titre de *Relazione della Peste insorta l'anno* 1763 *nei Borghi di Spalato con il Progetto dell'Autore per diffendere la Dalmazia dai successivi Attacchi del Morbo Contagioso*. Il appartient à la Bibliothèque Royale de Copenhague et porte le numéro 88 des Nouveaux fonds du Roi (*Ny. k. S.* 88 — in 2°). Il existe une autre copie dans les Archives de l'État à Zara, mais les deux Mss., dont le texte est à peu près identique, sont extérieurement très différents. L'exemplaire de BRÜNNICH est calligraphié, bien cartonné et d'un aspect tout à fait imposant. Celui de Zara est écrit d'une plume ordinaire, inélégante et se présente sans couverture comme un cahier ordinaire. On ne peut savoir lequel de ces deux exemplaires est l'original, le cadeau fait à BRÜNNICH fut-il une élégante copie de l'autre ? ou CICAVO fit-il faire une rapide copie de l'original pour la déposer aux Archives ? Toutefois il est peu probable que l'auteur du texte ait mis à la disposition des autorités une copie aussi ordinaire que celle qu'on garde à Zara. Le texte montre aussi que le général était fort persuadé de sa valeur personnelle et de l'importance de la proposition, dont il était l'auteur ; et il dut choisir son calligraphe en conséquence.

Dans l'édition, que nous donnons les deux textes sont conférés, et les rares différences importantes sont notées au bas de la page.

(8) HOLBERG, L., NICOLAI KLIMII *iter subterraneum*, édité anonymement à Leipzig en 1741, traduit en Danois en 1742. CICAVO ne peut avoir connu HOLBERG, le Molière danois, car ses comédies ne furent pas jouées en Dalmatie, et ne furent connues que bien après 1765 dans l'Italie du Nord. En Hongrie, elles furent représentées à cette époque. Le *Voyage* de NIELS KLIM eut un succès formidable dès son apparition, et fut traduit en plusieurs langues européennes.

Il y a toujours de petites différences dans la graphie des mots, mais on a suivi le texte du manuscrit danois. Dans le texte zaratin les nombres sont exprimés en lettres, dans l'autre manuscrit, en chiffres, mais à part ces minuties, les deux textes sont identiques.

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En 1763, lors de l'épidémie, la Dalmatie appartenait à la République Venitienne, presque identique à cette Dalmatie qui figurait sur les cartes avant la guerre mondiale. Depuis, l'état Yougoslave a reconquis tout le littoral sauf la ville de Zara et l'île de Lagosta (Lastova), actuellement remise à l'Italie. Au Nord, la Dalmatie était séparée de la Croatie par les hautes montagnes de Vélébit; plus au Sud les Alpes dinariques constituaient une frontière naturelle avec la Bosnie et l'Herzégovine. Au Sud la situation était plus compliquée, car la République de Raguse, toujours en difficultés pour se faire reconnaître par Venise, s'était isolée des territoires venitiens en cédant aux Turcs, par la paix de Karlowitz, en 1695, quelques petites parties de son district.

On comprend facilement que la plupart des épidémies fûssent introduites par voie maritime, car la côte était étendue, tandis que la frontière terrestre était barrée par des montagnes partiellement inaccessibles. Cependant les épidémies de provenance continentale ne sont point inconnues. Entourée de pays comme la Bosnie, l'Albanie et le Monténégro, occupés par les Turcs ou sous l'influence turque, la Dalmatie avait depuis un temps très reculé développé ses communications par caravanes, à travers les cols, d'ailleurs peu nombreux des montagnes. La route de Sarajevo à Spalato par Clissa était la plus fréquentée. Ces caravanes que vit BRÜNNICH se sont maintenues dans la même forme jusqu'à nos jours avec un trafic encore considerable, bien que les véritables caravanes aient disparu entre 1870 et 1880. Le lazaret, dont parle BRÜNNICH existe encore, il est devenu prison de l'État. Originairement, c'était un hôpital pour les lépreux; il renferme encore une chapelle sous le vocable de St. Roch. Au temps de CICAVO on y internait les caravanes pour y subir une quarantaine. Les édifices avaient la forme d'un vaste caravansérail, avec deux grands cours, où l'on pouvait héberger les chevaux et les ânes; les conducteurs passaient la nuit dans les ailes, qui avaient deux étages. Il va sans dire que cette quarantaine avait une grande importance sanitaire.

Quand BRÜNNICH débarqua en Dalmatie, on vivait encore sous l'impression de l'épidémie de peste survenue peu de temps auparavant. Les laissez-passer étaient toujours valables par toute l'Italie et l'un d'eux, daté de Loreto (province d'Ancona) est collé dans le journal. (cf. planche 5, fig. 3) La liberté complète n'était pas encore obtenue, mais on s'y accommodait, car la maladie n'était pas chose inconnue. Elle avait maintes fois envahi la Dalmatie et Spalato est assez souvent mentionné dans les chroniques, de la même manière que d'autres villes dalmates à d'autres époques. FRARI (9), qui passe en revue toutes les épidémies de peste depuis l'an 170 p. C., cite pour le dix-huitième siècle : peste à Spalato en 1731-32 et en même temps à Zara, dont les environs furent aussi attaqués en 1745. Il mentionne encore l'épidémie de 1763, éteinte l'année suivante. SCHNURRER (10) y ajoute l'année 1708; chez les auteurs plus récents on trouve 1729-31, 1738 (Spalato), 1744, 1763, 1769-72 et 1783 (STICKER (11)). Ainsi la peste a été assez fréquente et les épidémies se sont succédées si rapidement qu'il est parfois difficile de les distinguer. Aussi semble-t-il que les Dalmates ne tiennent compte que de certaines épidémies spéciales où plutôt des recrudescences périodiques de la peste. PETTER (12) cite ainsi les années 1731, 1763 et 1783-84. Ces mêmes années sont notées par BAJAMONTI (13) qui en prend l'occasion pour rappeler une foule d'épidémies consécutives à la première invasion de la peste en 1348; pendant cette dernière la mortalité fut énorme, l'archevêque, beaucoup de nobles et une telle multitude de gens moururent que dans beaucoup de maisons, *non remanserat mingens ad parietem*. FRARI, déjà mentionnée cite en outre dans ses lettres (14) les trois mêmes périodes de peste que PETTER et BAJAMONTI, et dit que la maladie fut chaque fois importée des provinces turques par les rapports commerciaux.

Ce dernier fait semble incontestable, car la peste règna à Constantinople et sur le littoral turc tous les ans de 1721 à 1797,

(9) FRARI, A. A., *Della peste*, Venezia 1840, I, (le tome II n'a jamais paru.)
(10) SCHNURRER, F., *Chronik der Seuchen*, Tübingen 1825.
(11) STICKER, G., *Die Pest*, I, Giessen 1910.
(12) PETTER, F., *Dalmatien*, Gotha 1857, II.
(13) BAJAMONTI, GIULIO, *Storia della Peste, che regno in Dalmazia negli anni* 1783-84, Venezia MDCCLXXXVI p. 136.
(14) FRARI, A. A., *Sulle presenti questioni risguardanti il contagio*. Lettere. Venezia 1847. p. 118.

sauf les années 1725, 1727, 1737, 1775, 1777, 1782 et 1793. La maladie était devenue endémique (15), entretenue par les nombreuses recrudescences observées en Asie pendant la dernière moitié du siècle, et surtout l'épidémie sévère, qui, éclose en Syrie en 1757, étendit ses ravages à tout le bassin Méditerranéen, et envahit à peu près tous les pays voisins. La Serbie et la Bosnie furent infestées (16), quand la Dalmatie fut attaquée à son tour en 1763-64, mais l'épidémie fut de courte durée et n'a pas beaucoup attiré l'attention. Elle a toujours été éclipsée par la grande et mortelle épidémie de 1783-84, qui est connue de tout le monde là-bas. Aussi semble-t-il qu'aucun rapport n'ait été publié sur l'épidémie de 1763, et CORRADI lui-même (17), le mieux renseigné sur l'épidémiologie italienne, n'en dit que ce qu'on va lire d'après FRARI (18) : « La peste passa de la province ottomane de Bosnie en Dalmatie et se répandit jusqu'aux faubourgs de Spalato. Grâce aux mesures prises, la ville fut sauvée, mais la maladie ne disparut que dans la première moitié de l'année suivante ». Pour qui ne connaît Spalato la citation est un peu obscure, car les faubourgs attiennent ordinairement à une ville. Autre est le cas à Spalato où la vieille ville (Stari Grad de nos jours) se trouve à l'intérieur du palais de DIOCLÉTIEN, dédale de ruelles étroites, nombreuses, et renfermant plus de 3000 habitants. Hors des murs se trouve la nouvelle ville (Novi Grad), divisée en quatre faubourgs (Veliki varos = Borgo grande, Lučac, Manuš et Pozzobon.)

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La Dalmatie en tant que province était gouvernée comme un généralat et immédiatement subordonnée au gouvernement de la République venitienne. Un compte rendu de 1770 au gouvernement anglais (19) nous renseigne sur la constitution du service sanitaire de la république. L'autorité suprème était le Tribunal

(15) FRARI, *l.c.* p. 58 avec renvoi à DE SEGUR-DUPEYRON : *Mission en Orient*; Rapport. Paris 1846.

(16) STICKER, G., *l.c.* I p. 252.

(17) CORRADI, A., *Annali delle epidemie occorse in Italia*, IV Bologna 1876 p. 200.

(18) FRARI, A. A., *Della Peste...* p. 678. FRARI dit aussi que 530 personnes moururent dans les faubourgs de Spalato.

(19) HOWARD, JOHN, *An account of the principal Lazarettos in Europe, with various papers relative to the plague : together with some further observations on some foreign prisons and hospitals*. Warrington MDCCLXXXIX, p. 12.

de Santé, érigé en 1448 pendant la peste par décret du Sénat et ayant son siège à Venise. Ce tribunal avait été maintes fois réorganisé et adapté aux exigences du moment. Vers la fin du dix-huitième siècle, il était dirigé par trois commissaires, élus annuellement par le Sénat. Leur activité était secondée par deux sous-commissaires, et deux autres, extra-ordinaires, choisis parmi d'anciens commissaires ou des gens connus pour leur sagesse et prudence. Ces derniers assistaient aux delibérations, quand il était nécessaire, et quand les affaires étaient plus difficiles et plus pressantes. Toute décision prise à l'unanimité des sept membres était sans appel pour tous cas tant civils que criminels regardant la santé publique. Pour éviter les abus, on choisissait les commisaires parmi les gens les plus riches, et leur salaire était minime, cette fonction étant toute de confiance.

Le secrétaire du Tribunal était un notaire public ou un avoué ayant quelques copistes à sa disposition. On élisait aussi pour les divers quartiers des villes des inspecteurs de santé, qui avaient accès aux déliberations du Tribunal, surveillaient les marchés et les mendiants, et devaient prendre toutes mesures contre les malheurs causés par la détresse et pauvreté. Ils enregistraient les cas de mort, précaution nécessaire, car les cadavres, surtout après mort subite, devaient être inspectés par un médecin et un chirurgien, relevant du Tribunal. Ces deux derniers avaient un salaire fixe et pouvaient être consultés par le Tribunal. En cas d'épidémie leurs fonctions étaient de faire le service des lazarets.

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Quant à la Turquie, il ne faut pas croire qu'on n'y avait rien fait contre les épidémies de peste, qui, venant de l'Est avaient si souvent fait d'affreux ravages. Après l'épidémie de 1737, qui s'était montrée extrèmement meurtrière à Constantinople, le sultan MAHMOUD organisa en 1738 une série de commissions de santé dans les provinces. Ces institutions furent d'abord assez défectueuses et peu actives, mais peu à peu elles devinrent très utilisables. La direction était aux mains d'un Conseil de Santé, émettant des décisions obligatoires pour tout le sultanat. Il était divisé en deux moitiés, l'une constituée par des délégués des puissances étrangères, l'autre par des médecins et fonctionnaires

turcs. Ce conseil, officiellement nommé Bureau de Santé, semble avoir été d'une grande utilité. (20).

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Nos deux manuscrits disent que la peste commença en Bosnie en 1762, mais il est certain quelle y régnait déjà depuis un temps assez considérable, car elle attaqua en même temps plusieurs villes de la frontière bosniaque-dalmate, telles que Fionizza (Foinica), Zeppe, Prussaz, Scopie et Vacup (Valkuf), s'insinuant lentement vers Triplo et vers la frontière à Imoschi (21). C'est dire qu'elle avait envahi toute la province, étant sur le point de gagner d'autres pays. Il existe encore une lettre (22) du magistrat de Raguse, disant que la peste se répand en Albanie turque et qu'elle est dûment constatée en Bosnie. A Sarajevo elle a causé un tel nombre de décès qu'on pourrait croire à son extinction; mais elle persiste malgré la saison froide et s'est répandue à Mostar où deux ou trois maisons sont séquestrées. L'épidémie a probablement eu un cours variable, alternativement recrudescent et décroissant, ce qui semble confirmé par ce que les Ragusiens écrivaient (23) au Tribunal de Santé de Gênes, ville avec quelle Raguse faisait grand commerce. La peste est en permanence à Constantinople et après s'être ralentie légèrement, elle a recommencé et accru ses ravages. Il y a une nouvelle poussée à Smyrne, tandis que la maladie décroit à Salonique et en Albanie, où on peut la croire en voie d'extinction. En Bosnie la situation est toute autre; la peste s'est montrée en diverses villes, où un nombre plus ou moins grand de maisons est contaminé. Au commencement d'Avril, l'épidémie s'éteint en Bosnie (24), mais au milieu du même mois (25) trois villes de la Hongrie du Sud sont

(20) FRARI, A. A., *Sulle presenti questioni...* p. 55 et 56.

(21) Lettre de Zara, datée du 1 juin 1763 (Atti de Prov. Gen. PIETRO MICHIEL Libro I, carte 39-42.)

(22) Lettre du magistrat de Raguse au Tribunal de Santé de Venise, datée du 10 janvier 1763 (Lettere e Commissioni di Ponente, Libro 77, 1763, fol .3 dans les Archives de Raguse.)

(23) Lettere e Commissioni di Ponente, Libro 77, 1763, f. 8, datée du 23 janvier 1763.

(24) Lettere e Commissioni di Ponente, Libro 77, 1763, f. 25. Lettre au Tribunal de Santé de Gênes, datée du 9 avril 1763.

(25) ibidem f. 33. Lettre au Tribunal de Santé de Venise, datée du 14 avril 1763.

infestées. La lettre qui donne ces renseignements cite encore un rapport fait en Février par le consul de Durazzo sur la situation en Albanie. Scutari, Dulcigno et Durazzo sont indemnes, mais la peste s'est montrée à Juba non loin de cette dernière ville, et à Cavagh, et se perd à Tirana et à Elbasan, augmente à Cognizza et semble éteinte à Mostar. On voit par ces renseignements qu'à tout le moins, la partie Nord du pays était contaminée et que la Dalmatie était menacée de tous côtés.

On a déjà dit que les rapports commerciaux jouaient un rôle prépondérant dans la propagation de la peste par le côté turc en Dalmatie; mais il y a d'autres choses à considérer à ce propos. Comme dans beaucoup d'autres épidémies, la famine joue son rôle; on le vit en 1763 et plus tard en 1784 quand les Dalmates se rendirent en foule dans les provinces ottomanes pour y chercher leur subsistence. Le littoral extrèmement rocailleux de la Dalmatie ne produit qu'une quantité minime de blé en comparaison des champs fertiles de la Bosnie. Encore est-ce une chose digne d'attention, mentionnée par CICAVO, que la frontière était tracée de telle façon que les Dalmates ne possédaient pas de pâturages pour leurs bestiaux. Dans le premier cas les Turcs renvoyèrent les émigrants de l'autre côté de la frontière (26); mais pour le second, ils se montrèrent plus accommodants, et louèrent les pâturages aux Dalmates, d'où un va et vient fréquent. Il s'ensuivit qu'un assez grand nombre de familles se fixèrent du côté bosniaque, et envoyaient des marchandises par la voie des caravanes, aux villes du littoral. Quand la peste éclatait, on s'enfuyait au pays-natal. Mais les épidémies éclataient si souvent dans les provinces ottomanes qu'on considérait toujours la Bosnie comme contaminée; et l'on ne recevait ni marchandises ni gens sans prendre à leur égard des garanties sanitaires, élaborés par un système spécial. Tout le long de la frontière il existait depuis des temps reculés un certain nombre de « posti di riduzione » (27) avec quelques soldats, par lesquels tout le transit commercial passait en temps de paix. En dehors des marchandises incapables de propager l'infection, les autres étaient dirigées sur des lazarets ou elles

(26) Lettres du provéditeur PAOLO BOLDÙ, écrites par le Dr. GREGORIO STRATICO, I, datées : Zara le 16 juillet 1763 et Spalato le 3 août 1783.

(27) BAJAMONTI, *l.c.* p. 15.

étaient examinées et soumises à la quarantaine. Il est sûr que la contrebande laissait place à la fraude, car on s'en plaint dans les lettres de STRATICO et le manuscrit de CICAVO. Et les postes militaires reçurent l'ordre de prendre des mesures énergiques contre ces importations clandestines. Pendant les épidémies, les importations illicites augmentaient. Aussi, à la première nouvelle de quelque peste chez les Ottomans, le provéditeur général faisait-il garder toute la frontière. On y plaçait des sentinelles ou des postes munis de quelques soldats. Cette ligne d'une longueur de 160 à 180 lieues était divisée en cinq districts correspondants aux territoires de Knin, Sign, Imoschi, Vergoraz et Narenta, tous commandés par un chef militaire. En hiver, quand tout était couvert d'énormes couches de neige, on retirait le cordon sanitaire en supprimant temporairement quelques postes. BAJAMONTI, qui traite longuement de toutes ces précautions, déplore que ces mesures militaires n'aient jamais réussi à écarter la peste de la Dalmatie, quand les provinces ottomanes étaient contaminées. Il en énumère diverses causes : premièrement, personne n'osait se risquer à avouer l'existence du mal, ensuite les Turcs se gardaient d'en parler, par superstition ou crainte d'entraves à leur commerce; enfin parceque les Morlacs (28) étaient dans une situation économique tellement pénible, qu'il leur fallait chercher à profiter de toutes les chances. Aussi commerçaient-ils aveuglément sans s'occuper de leur entourage, et cherchaient à éviter par tous les moyens l'inspection officielle.

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On verra que le projet du général CICAVO aborde des questions inconnues. Et comme nous ne nous proposons que d'éditer son manuscrit et non pas d'écrire l'histoire d'une épidémie, deux questions se posent devant le lecteur. La première est de savoir si le projet de CICAVO fut jamais adopté; la seconde, d'étudier comment l'auteur a pu construire un plan si bien élaboré, à quelles sources il a puisé, et enfin s'il a eu des précurseurs en cette province éloignée de l'Italie. Il nous restera à examiner l'évolution du système venitien de séquestration et la constitution des cordons sanitaires.

(28) Les Morlacs sont de race serbo-croate et ont leur domicile à l'intérieur de la Dalmatie.

Seuls, les comptes-rendus des épidémies de peste après 1763 en Dalmatie peuvent donner une réponse à la première question. L'épidémie de 1784 est la principale, seule qui sera prise en considération ici, parceque la plus grande, et aussi la première après celle de 1763. Mais les recherches sont très difficiles, les matériaux pour la description de cette épidémie étant dispersés en différents fonds d'archives, et ne pourront être menés à bien que par celui qui pourra les compulser tous. Divers indices démontrent que le projet de CICAVO a pu être adopté au moins partiellement. On voit ainsi dans les lettres du provéditeur PAOLO BOLDÙ, écrites par le Dr. GREGORIO STRATICO (I. 1783), que le Dr. PETTOROSSO, médecin des épidémies proposa le 16 Août 1783 que les sujets mis en quarantaine à la frontière fussent transférés dans un nouveau camp à Han à une heure de distance de Billibrig, dans une plaine voisine du fleuve Cettina,celle-là même que CICAVO avait indiquée. Le camp devait être entouré de palissades et comprendre un certain nombre de baraques, du modèle supplémentaire en usage dans les hôpitaux. Il devait aussi être muni de deux lazarets, l'un pour les pestiférés, l'autre pour les maladies intercurrentes, non pestilentielles. Le fleuve qui coulait auprès facilitait les nettoyages; les chambres affectées à cet usage et au dépôt des vêtements et autres objets, devaient être des caves, creusées dans le sol (29). Ce projet de camp fut adopté par le Tribunal de Santé de Venise le 30 septembre 1783; mais il semble que ce plan fut étendu ou plutôt dédoublé, car un second camp fut érigé à Ervazze en même temps que celui de Han. Les lettres de STRATICO montrent le camp d'Ervazze en pleine fonctionnement (30) mais sans donner aucun autre renseignement. En outre on avait érigé le long de la frontière huit lazarets de campagne, dont trois dans les villes de Sign et d'Imoschi et deux à Knin; ces derniers huit comptaient en tout 800 lits. CICAVO ne préconisait qu'un seul lazaret de campagne, c'est dire que son projet fut sensiblement étendu.

L'armement de la ligne frontière présente aussi quelque intérêt. On voit (31) dans la description de l'épidémie de Spalato, que dès 1763 un cordon de soldats gardait déjà toute la frontière.

(29) Lettre de Zara, datée du 24 août 1783.

(30) Le camp d'Ervazze était prêt dès septembre 1783; Lettre de Zara, datée du 19 septembre 1783.

(31) feuille 6^{v} du manuscrit de CICAVO.

On avait donc déployé une force militaire complète appuyée sur les postes du temps de paix; de quoi l'on peut inférer que le projet de CICAVO n'innove rien d'autre qu'une réorganisation et un renforcement de l'organisation préexistante. L'adoption de son projet demeure donc incertaine et il faut chercher d'autres arguments; les voici :

Dans les lettres de PAOLO BOLDÙ on parle d'une démarcation de toute la frontière, organisée par un certain brigadier NONVELLER, plans qui seront envoyés au Tribunal de Santé Venitien, mais on ne dit pas que cela ait été fait. Les Archives de Zara sont muettes à ce sujet et si ces plans ne se trouvent pas à Venise il faut conclure qu'on ne procéda point alors à la délimitation de frontière annoncée. A l'appui de cette opinion, on peut dire que les Archives de Zara conservent cinq autres plans de postes militaires sur la frontière ottomane, tracés à la demande du provéditeur général ANDREA QUERINI. Ces plans énumèrent les postes, qui existaient de temps immémorial, ceux qui furent établis en 1794 à la menace d'une nouvelle épidémie, et cette organisation est datée de 1795. Les premiers de ces postes sont incontestablement ceux établis en 1783-85, en 1763 et antérieurement. C'est à eux que furent données des instructions très précises dans un règlement de Zara du 1 juillet 1783 (STRATICO I). Dans le § 2 le provéditeur général PAOLO BOLDÙ dit, qu'on a érigé près de la frontière un certain nombre de guérites sous l'inspection des postes militaires, et que tout venant du côté ottoman doit s'y adresser pour subir une quarantaine sevère avant d'entrer en Dalmatie. Le § 3 édictait la peine de mort contre qui passerait la frontière sans se présenter au poste de garde. La même peine frappait ceux qui essayeraient de se soustraire par la fuite à la quarantaine prescrite par les postes (FRANCESCO FALIER, le 19 octobre 1783). On voit bien qu'en 1783 on ne fit rien de plus que de confirmer de vieux usages, et les plans ne montrent qu'une réadaptation à la situation présente. Là encore impossible de dire si l'on a suivi ou non le projet de CICAVO. C'est une probabilité, sans plus.

Nous avons vu que la fermeture de la frontière faisait partie d'un système de séquestration, commun aux individus, aux maisons, aux villes, aux faubourgs, à la province et à l'Etat lui-

même. MURATORI (32) répète les points fondamentaux de ce système en disant, qu'on peut tenir la peste à distance en employant 1) des laissez-passer, 2) le barrage des routes commerciales avec les localités suspectes, 3) des gardes de frontière, 4) des patrouilles sur les grands chemins et 5) la surveillance des murs et portes de ville.

Ce que CICAVO rapporte du cours de l'épidémie montre à quel point fut poussé ce système de séquestration. On voit (f. 5^{v}) que les faubourgs sont séparés de la ville sise à l'intérieur du palais de DIOCLÉTIEN; comment ils sont séparés les uns des autres; comment l'ensemble de la ville, de ses faubourgs et de la banlieue sont isolés du reste de la province. Les maisons, dans lesquelles la peste s'est montrée, sont gardées par une sentinelle, marquées d'un numéro rouge; les habitants doivent être renfermés pendant 40 jours (f. 10^{v}). Les mesures générales et urbaines s'enchaînent. CICAVO ne parle que de Spalato, mais les lettres de STRATICO sur la peste de 1783-85 traitent de mesures générales, or dans celles-ci trouve toujours trois lignes de barrage : la ville, le district ou le territoire d'une ville; et enfin le cordon sanitaire de la frontière.

Il va sans dire que ce système de séquestration n'était pas particulier à la republique venitienne ou à la Dalmatie. Il résumait l'expérience des épidémies antérieures; mais l'Italie avait été depuis le moyen-âge le pays guide en matières de prophylaxie de maladies infectieuses. Contagionniste, comme tout le monde, ce pays qui pendant des siècles avait présidé au commerce mondial, avait une plus grande expérience des méthodes à suivre, et donné l'exemple aux autres pays. On essayera dans les pages suivantes d'exposer les points essentiels de l'histoire de la séquestration, bornée à la quarantaine de terre et sans se noyer dans des détails, qu'on trouvera suffisamment dans le commentaire du Ms. de CICAVO. Son projet montre dans sa plus extrême rigueur cette forme de quarantaine; notre but est d'indiquer comment on est parvenu peu à peu à cet effort maximum.

La mesure essentielle est celle des cordons militaires; et nous serons brefs sur les mesures de barrage, abatis d'arbres, ponts coupés, traverses au milieu des chemins et autres défenses matérielles. Semblables méthodes ont sans doute été employés un

(32) MURATORI, L., *Del governo della peste*, Modena 1714, p. 19-21.

peu partout à titre supplémentaire et dans les districts peu fréquentés. Elles furent en vigueur jusqu'au 18me siècle (33).

S'appuyant sur la théorie de la contagion, les municipalités des villes commencèrent dès le 14me siècle à defendre l'entrée des villes à ceux qui venaient d'endroits contaminés (34). Au temps de la mort noire, en 1348 la municipalité de Raguse parla d'isoler complètement la ville de ses alentours, mais le projet ne fut pas approuvé. On organisa cependant une sorte d'isolement en renvoyant les pestiférés à l'île de Zuppana, réservée aux malades de cette catégorie (35).

Si l'on considère les gardes des portes de la ville et des maisons privées comme l'ébauche des cordons sanitaires, ceux-ci remontent au temps de GUY DE CHAULIAC, c.a.d. à l'épidémie de peste d'Avignon en 1348 et 1360, car il dit : « Finaliter ad tantum devenit, quod tenebant custodes in civitatibus et villis et nullum permiserunt intrare, nisi bene notum » (36) (sans doute la garde municipale comme en Italie). Cependant divers auteurs (LECHNER, WEYL e.a.) interprêtant une citation prise chez MURATORI (37) considèrent que la séquestration à main armée aurait été établie à Padoue à peu près à cette époque, mais cette interprétation ne semble pas admissible. De la phrase même on ne peut induire autre chose que ce fait que la garde municipale se montra vigilante. Par contre LECHNER a publié des documents portant que le roi KASIMIR de Pologne pendant la mort noire, barra son pays vers

(33) On lit à la page 33 du *Traité de la peste*, qui fut publié du Conseil de Santé de la Basse-Autriche sous le titre : *Ansteckender Seuche, welche 1713 Jahr in das Ertz-Hertzogthum Nieder-Oesterreich eingeschlichen* ; So lang Gott eure Gemeine von solcher gefährlichen Seuche bewahret / versehet euch mit genugsamen Wachten / grabet die Neben-Wege ab / werffet die unnötthige Brücken ab / richtet Schranken auf / und lasset von angesteckten Orten niemand ein / unter was vorwand es immer seyn könte / es sey dann / ihr seyd versichert / dass solche Reisende / von sechs Wochen her / in keinem angesteckten Ort gewesen / oder gar aus wissentlich-reinen Oertern kommen.

(34) CORRADI, A., *Annali delle epidemie occorse in Italia*, 1886, I, p. 195, note sous texte N° 3. Pérouse fut la première ville qui défendit d'abriter les étrangers venus des endroits suspects (l.c. p. 265).

(35) LECHNER, K., *Das grosse Sterben in Deutschland*, 1884, p. 68.

(36) HAESER, H., *Geschichte der epidemischen Krankheiten*, Jena 1865, Anhang p. 37.

(37) MURATORI, L. A., *Script. rerum Italicarum* XII, p. 926 : civitates cupientes evitare talem pestem omneis extraneis prohibebant ingressum.

l'Autriche et la Silésie, pour écarter les marchands susceptibles d'introduire la maladie.

Environ vingt-cinq années après la mort noire un nouveau chapitre de prophylaxie commence avec les mesures prises par BERNABÒ VISCONTI pour empêcher les processions, l'influence du culte des Saints et des reliques. Il écrit le 17 janvier 1374 une lettre, bien connue dans l'histoire des épidémies, adressée au podestà de la ville Reggio d'Emilia, et qui est ainsi conçue (38) : « Volumus quod quaelibet persona, cui nascentia, vel brosa veniet statim exeat urbem vel castrum vel burgum, in quo fuerit, et vadat ad campos in capannis, vel in nemoribus, donec aut moriatur, aut liberetur. Item qui servient, stent post mortem alicujus decem dies antequam habeant consortium cum aliqua persona. Item Sacerdotes Ecclesiarum Parochialium inspiciant infirmos, et videant quod malum est; et statim notificent inquisitoribus deputatis sub poena ignis. »

Comme on le voit les propositions de VISCONTI contenaient des préceptes qui furent suivis pendant toute la période où la peste se montra en Europe. Cependant l'isolement de 10 jours se montra bientôt insuffisant, et le plus ancien règlement quarantenaire connu, publié à Raguse le 27 juillet 1377 porte le délai au triple, c'est à dire un mois. En voici les termes (39) :

« In Consilio Majori Consiliarorum LXVII captum per XXXIV, quod tam Nostrates quam Advenae venientes de locis pestiferis non recipiantur in Ragusium, nec ad ejus Districtum, nisi steterint prius ad purgandum se in Mercana, seu in Civitate veteri [Ragusa vecchia] per unum Mensem. Item per Consiliarios XLIV ejusdem Consilii captum fuit, quod nulla persona de Racusio, vel ejus districtu andeat vel presumat ire ad illos, qui venient de locis pestiferis, et stabunt in Mercana vel Civitate veteri sub poena standi ibidem per unum Mensem; et qui portabunt illis de victualiis seu de aliis necessariis, non possint ire ad illos sine licentia Officialium ad hoc ordinandorum, cum ordine ab ipsis Officialibus eis dando dicta sub poena standi ibidem per unum Mensem. Item per Consiliarios XXIX ejusdem Consilii captum fuit et

(38) CORRADI, A., *Annali* I, p. 228.

(39) LECHNER, K., *l.c.* p. 67. cité d'après le programme du gymnase de Zara N° 24, 32.

firmatum, quod quicunque non observaverit praedicta, seu aliquid praedictorum, solvere debeat de poena Hyperperos L, et nihilominus praedicta teneatur observare. »

D'autres prescriptions tendaient moins à assurer l'isolement qu'à réduire les chances de contamination en interdisant les rassemblements. Pendant la première moitié du 14e siècle on avait bien observé que les réunions, foires, marchés et autres affluences du foule pouvaient raviver l'infection; et l'on défendit toutes réunions et attroupements. A Florence, on allait jusqu'à interdire les cortèges funèbres (40). Qu'on ait pris des mesures contre les flagellants (41) en les chassant hors des villes, cela se comprend; mais on s'étonne de voir en même temps recommander les processions contre la peste !

L'isolement des suspects et des contaminés avait pour corollaire l'organisation d'hôpitaux supplémentaires et on utilisa fort à propos les maladreries, situées hors les murs et demeurées vides en beaucoup d'endroits après la disparition de la lèpre. Ainsi, à Ferrare, en 1346, on affecta le monastère de San Lazzaro aux contagieux (42), bien qu'on eût déjà aménagé une petite île à cet effet. Raguse aussi érigea en 1466 un hôpital, après deux années de peste.

Le mois, c'est à dire les 30 jours de quarantaine terrestre et maritime, se montra bientôt insuffisant, surtout pour les marchandises de mer, et quand en 1383 la ville de Marseille ouvrit la première station de quarataine maritime la période d'observation fut fixée à 40 jours, laps de temps bientôt universellement adopté même pour la quarantaine terrestre. Ce délai fut promulgué en diverses villes, mais il ne semble inscrit dans les règlements de peste qu'après 1449.

Cette quarantaine prolongée ne put suffire à empêcher l'introduction de la fatale maladie et on chercha dès lors à découvrir d'autres facteurs insoupçonnés. Comme la peste éclatait souvent dans les quartiers pauvres, peuplés de juifs, quand ceux-ci n'avaient pas de ghetto, cette race fut considerée comme la propagatrice de la maladie. On prit le parti de séquestrer les ghettos. Ce système de séquestration des juifs fut inauguré en 1468 à Messine; le

(40) Corradi, *l.c.* I p. 183.
(41) ibidem. p. 203 la note et p. 246.
(42) Corradi, l. c. I, p. 280.

quartier juif, infecté de peste fut barré et isolé. Plus tard cet isolement fut de régle et le réglement antipestilentiel de Spalato, en 1784, contient un long chapitre sur l'organisation de l'hygiène dans le quartier juif. L'épidémie de 1468 apporta en outre une autre innovation : A Parme on isola les malades dans leurs maisons, sans les porter à l'hôpital (43).

Les hygiénistes modernes considèrent souvent le *Trattato politico della Peste* de MAURIZIO DA TOLONE, paru en 1661, comme fort important dans l'histoire des séquestrations à cause du système perfectionné qu'il préconise. Il affecte une maison aux autorités sanitaires, une autre aux suspects, à ceux qui sont en observation et à ceux qui ont communiqué avec les pestiférés. En sus des hôpitaux necessaires, il faut un établissement de convalescents. Les villes sont divisées en quartiers, surveillés par un préposé; les habitants doivent être séquestrés pendant 40 jours; cependant il est permis de quitter la ville pendant les 8 premiers jours. Il n'y a donc rien de bien nouveau dans le système de MAURIZIO et l'inédit qui s'y trouve n'est pas relevé par les auteurs (44). Ce que MAURIZIO désire c'est — d'après MURATORI (45) — qu'on mette toutes les classes inférieures de la population en quarantaine, car c'est par elles que la peste est diffusée, et non par les gens aisés ou les nobles. Comme on le voit, ce père Capucin est peu démocrate. Cependant il faut dire que la permission de quitter les villes était valable aussi pour les petites gens; mais s'ils restaient, ils devaient être isolés dans ce que MURATORI appelle les prisons médicales, leurs maisons.

Vers 1700 on commence à établir des cordons sanitaires militaires le long des frontières, et comme au 14^{me} siècle c'est de la frontière entre la Pologne et la Hongrie qu'il est question. C'est l'archiatre ALARDUS MAURITIUS EGGERDES de Trèves qui proposa ce projet au temps où la peste sèvit en Allemagne (1708-15). C'est le système italien si souvent mentionné, mais lors de l'épidémie de Provence de 1720 on opéra la séquestration complète au moyen de cordons militaires, non seulement autour de Marseille,

(43) Tosto che dagli ufficiali sapevasi qualcuno essere ammalato in casa serravanlo, overo conducevanlo à San Leonardo (CORRADI *l.c.* I p. 309). Isolation à la maison fut introduite en Angleterre en 1604.

(44) Le livre n'étant pas à ma disposition, j'ai suivi WEYL .

(45) MURATORI, *l.c.* p. 25.

mais aussi des autres villes (46). En ce cas on employait aussi de petits postes armés assez nombreux pour rester en vue les uns des autres (47). Le cordon se montrait efficace, car la ville d'Aurillac lui dut son salut. Il va sans dire que l'Italie chercha à se garder contre une infection venant de France et on établit des barrages très sévères (48), en coupant tout commerce avec Gênes, le littoral et la Corse, et aussi la Suisse. Sur cette frontière on employa une ligne extérieure, renforcée par une autre ligne intérieure aux endroits où le commerce était le plus fréquent et actif. Les deux lignes étaient armées.

Cependant le système des cordons n'était pas encore complet; les lignes furent déployées successivement et ne furent pas armées de suite sur toute leur étendue. On n'y vint que plus tard. Quand la peste, en 1743, se propagea de la Sicile en Calabre, à l'autre rive du détroit de Messine, on y établit de suite deux cordons (49), dont l'un contournait la ville de Reggio et son territoire et l'autre coupait la presque-île dans sa partie la plus étroite entre Euphémia et Golfo di Squillace, de telle façon que cette partie du pays fût séquestrée du reste du royaume.

En Sicile, on dressa aussi un double cordon, allant de Mangiavacche et Casino près de la mer tyrrhénienne à San Leo et Palma près de la mer ionienne. On supprima bientôt la ligne extérieure, mais prétendre que ces cordons sauvèrent la Sicile de l'épidémie, est exagéré, car, à la vérité, les cordons se montrèrent de suite incapables de retenir ceux qui désiraient les forcer; maints récits disent aussi que les paysans chassaient les fugitifs des villes séquestrées. Ainsi les cordons ne réalisèrent qu'une prophylaxie médiocre. La peste franchissait aisément ces barrages; et nous savons aujourd'hui, que les sentinelles ne peuvent rien contre les puces et les rats. Cependant ces cordons furent, à tout prendre un moyen pratique, en certains cas même utile; mais avant qu'ils ne disparûssent pour toujours, leur évolution avait encore un stade à franchir. Ils devinrent des institutions permanentes,

(46) MARTIN, *Histoire de la dernière Peste de Marseille, Aix, Arles et Toulon.* Paris, MDCCXXXII, p. 26. On trouve les réglements, etc., dans *Traité des causes, des accidents et de la cure de la Peste.* Paris, MDCCXLIV. Part II. p. 10.

(47) *Traité des causes...* II p. 59.

(48) CORRADI, *l.c.* IV, 1, p. 62.

(49) CORRADI, *l.c.* IV, 1, p. 127.

établies d'après l'expérience séculaire. On le verra dans les réglements de VON SCHRAUD (50), qui a tiré les conséquences de tous les systèmes de jadis.

C'est parmi les organisateurs des cordons permanents que CICAVO occupe une place spéciale. En proposant d'établir un cordon armé permanent à la frontière turco-dalmate, il se montre un novateur. Le cordon antipesteux permanent de l'Autriche ne fut établi qu'en 1770, c'est à dire sept ans plus tard. Mais quoique CICAVO ait la priorité, cela ne diminue en rien les mérites d'un KOLLOVICS et d'un CHENOT. C'est à ceux-ci qu'on doit les principes dont s'inspira VAN SWIETEN. Par ordre de l'impératrice MARIE THÉRÈSE, celui-ci rédigea le réglement autrichien, qui traçait un cordon autour de la Galicie jusqu'à la Croatie, une ligne armée d'une longueur énorme, qui fut plus tard rattachée au cordon dalmate, de façon à isoler tous les Balkans.

Notre but n'est pas d'étudier les cordons permanents jusqu'à leur terme. Malgré l'énorme nombre de soldats mobilisés à cet effet, la peste perça les lignes en Autriche comme ailleurs. On eut beau rélier le cordon autrichien au cordon russe, tracer de nouvelles lignes compliquées, et ramifiées isolant les bords de la Mer Noire des régions saines, ce fut en vain et on se rendit compte enfin qu'il y avait un facteur étiologique qu'on ne connaissait pas. C'est alors qu'on abandonna l'ancienne théorie de la transmission des germes par le contact, les marchandises, et les hommes et que la contagion par les miasmes fut discutée par les Conférences sanitaires internationales. Mais à ce moment précis, la peste disparut en tant que facteur épidémique en Europe, cédant la place à un nouveau fléau, le choléra.

Que le projet du général CICAVO ait été adopté ou non par la Republique venétienne, toujours est-il qu'il a rendu des services incontestables à sa patrie. Aussi le doge de Venise l'honora d'une médaille d'honneur que nous trouvons dessinée sur une feuille libre, déposée dans le manuscrit. Cette médaille, décernée par le doge ALOYSIUS MOCENIGO, porte a l'avers le lion de St Marc avec, en bas, la date de MDCCLXIV. Le revers est reproduit ici. (cf.

(50) SCHRAUD, FRANZ, EDLER VON, *Vorschriften der inländischen Polizey gegen die Pest und das gelbe Fieber*. Wien 1805.

planche 5, fig. 4) De semblables médailles sont connues pour l'épidémie de 1784, car le doge PAOLO REGNIER en fit frapper pour décorer les soldats qui pendant la peste avaient gardé les lignes de la frontière bosniaque (51). L'avers porte encore le lion de Venise, mais l'inscription du revers est individuelle et dès lors variable. Des medailles du modèle 1784 existent encore au Musée civique de Venise (52). (*à suivre*)

Copenhague J. W. S. JOHNSSON

Zara *en collaboration avec* A. KREKICH.

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(51) HEYDEN, H. VON, *Ehrenzeichen im Königreich Italien und in seinen erloschenen Staaten.* Wiesbaden 1910; p. 60-61; no 149-150.

(52) N° 109 et 110. Une autre variante plus petite figure à la table III, 152.

Cauchy and Bolzano in Prague.

No reference has ever been made, as far as we know, to the fact that CAUCHY and BOLZANO, both creators of modern exact criticism in mathematics, lived near each other for some years, from 1833 to 1835. At that time the banished king of France, CHARLES X, had appointed the catholic and royalist CAUCHY tutor in mathematics to the young duke of Bordeaux (later HENRY OF CHAMBORD). CHARLES had his splendid residence in the royal castle of Hradchin above the old capital of Bohemia, Prague. BOLZANO, the catholic preacher and professor of theology at the University of Prague lived at that time also in or near Prague, in Techobuz.

It is of interest to inquire whether these men of science were known to each other, and exchanged ideas. In consequence of the following facts however, it seems rather improbable that there existed any such personal acquaintance. CAUCHY, whose life is described by VALSON (1), and about whose Prague period interesting and amusing details are mentioned by the General d'HAUTPOUL, (2) was at that time the famous French Académicien. His elegant presentation of special new methods was already studied and followed in all parts of Europe. But in this period he was closely associated with a banished court, which maintained the severest reserve in a hospitable but foreign country and which constantly demanded his services. BOLZANO, on the other hand, had been removed from his professorship at Prague since 1819

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(1) C. A. VALSON. La vie et les travaux du Baron Cauchy. Paris, GAUTHIER-VILLARS, 1868, Tome I (XXIV + 290 pp.), Tome II (XXIII + 178 pp.) From this book we know the biographical facts concerning CAUCHY. The paper of J. BERTRAND, Eloge d'AUGUSTIN LOUIS CAUCHY (*Mémoires de l'Académie des Sciences de l'Institut de France* 47 (1904), p. CLXXXIII — CCV) does not contain any further information about CAUCHY's life at Prague.

(2) Général M[is] AMAND D'HAUTPOUL. Quatre mois à la cour de Prague, publié par le Comte FLEURY, Paris, Librairie PLON, 1902, XII + 420 p.

because of so-called lese-majesty and his criticism of certain doctrines of the Catholic religion; and also he lived secluded from society and public notice.

We know something about BOLZANO's life from his autobiography, published by his faithful pupil FESL (3). There exists, besides, a dissertation upon the history of BOLZANO's life based on the study of unpublished manuscripts, diaries and letters. The author is GOTTHARDT (3). But it is a pity that this study of this interesting « rebel » against Austria's rulers and the Catholic church could not have been completely published after the world war. As things stand now, neither FESL nor GOTTHARDT, as far as his work is published, mentions any influence of CAUCHY on BOLZANO.

It is also highly improbable that CAUCHY, compelled by his position to be extremely careful not to offend the imperial and royal authorities of Austria, would have sought a personal connection with a man like the compromised BOLZANO.

Besides this CAUCHY had already completed long before, as had BOLZANO, his works on the exact foundation of the theory of real functions. CAUCHY had published his investigations in the « Cours d'Analyse » of 1821 and in the « Résumé de leçons données sur le calcul infinitésimal » of 1823. About 1834 CAUCHY was chiefly occupied, in his spare time, with questions concerning theoretical physics; his investigations on the dispersion of light belong to this period; part of them were published in 1835-1836 by the editor CALVE at Prague. BOLZANO did not publish any pure mathematics after 1817, and was, about 1835, probably occupied by philosophical questions concerning theology, or perhaps with axiomatic problems in mechanics. His « Versuch einer objektiven Begründung der Lehre von der Zusammensetzung der Kräfte » was not published until 1842 (4). Neither this

(3) J. M. FESL. Lebensbeschreibung des Dr. B. BOLZANO mit einigen seiner ungedructen Aufsätze und dem Bildnisse des Verfassers, 1e Ausgabe, Sulzbach, SEIDEL, 1836; 2e Ausgabe, BRAUNMULLER, Wien, 1878.

J. GOTTHARDT. Das Wahrheitsproblem in dem philosophischen Lebenswerke BERNHARD BOLZANOS, *Inauguraldissertation*, Münster in W., 1918, Trier, Paulinusdruckerei, XLI + 133 + 33 pp. This book contains the titles of the chapters of GOTTHARDT's complete biography of BOLZANO.

(4) As far as we can learn from the bibliography in H. BERGMANN. Das philosophische Werk BERNHARD BOLZANOS, Halle, M. NIEMEYER, 1909, XIV + 230 p.

paper nor his paper on the aberration of light (5) suggests the possibility of a connection between him and CAUCHY (6).

In CAUCHY's works there does not exist, in our belief, any reference to BOLZANO, though the latter had almost the same concept of continuity and published it earlier than did CAUCHY.

The fact that both CAUCHY and BOLZANO were members of the Royal Bohemian Society of Science at Prague gives no reason to believe in the probabilty of a personal connection between them.

Until now only few letters of either CAUCHY or BOLZANO have been published. It would be interesting to investigate to what extent the contents of the unpublished letters would uphold our conclusions.

Cambridge (Mass.) RUTH and D. J. STRUIK. (7)
January 1928.

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(5) B. BOLZANO. Ein Paar Bemerkungen über die neue Theorie des Herrn Professor CHR. DOPPLER's Schrift « Ueber das farbige Licht der Doppelsterne und einiger anderer Gestirne des Himmels », *Poggendorff's Annalen der Physik und Chemie* (2) 60 (= 136), pp. 83-88 (1843).

Compare B. BOLZANO. CHRIST. DOPPLER's neueste Leistungen auf dem Gebiete der physikalischen Apparatenlehre, Akustik, Optik und optischen Astronomie. *Ib.* (3) 12 (= 140), pp. 530-555 (1847). We owe these references to Professor R. C. ARCHIBALD.

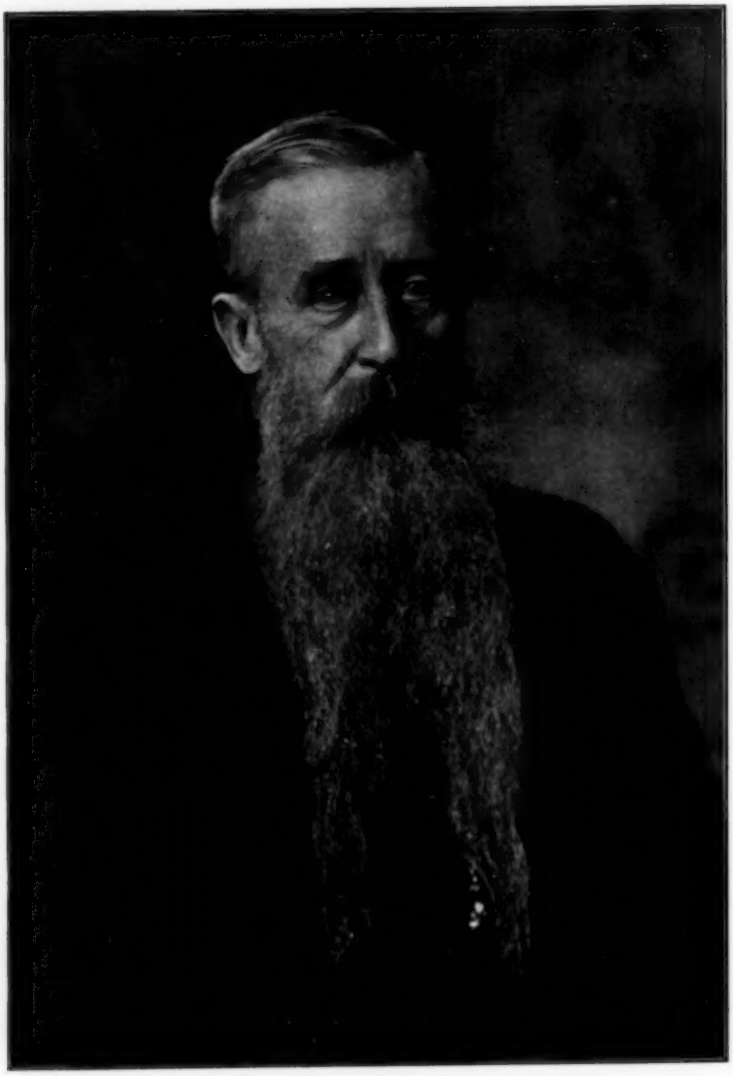
(6) Consult : O. STOLZ. B. BOLZANOS Bedeutung in der Geschichte der Infinitesimalrechnung. *Mathematische Annalen* 18 (1881) p. 255-279. Comparison of CAUCHY's and BOLZANO's conceptions also in H. HANKEL, article « Grenze », ERSCH-GRÜBER, Allgemeine Encyklopädie der Wissenschaften und Künste, Erste Section, Teil 90, (Leipzig, F. A. BROCKHAUS), 1871, p. 185-211, spec. p. 209-210, and in Ph. E. B. JOURDAIN. The origin of Cauchy's conceptions of a definite integral and of the continuity of a function. *Isis* I (1913) p. 661-703.

(7) This paper is due to a suggestion of Professor G. KOWALEWSKI of the University of Dresden.

Editor's Note.

In connection with STOLZ's article referred to above, account should be taken of the « Berichtigungen » by STOLZ in *Mathematische Annalen*, 22, 518-519 1883. There is an interesting article, BENARD BOLZANO (1781-1848), by DOROTHY M. WRINCH, in *Monist*, 27, 83-104, 1917. A portrait of BOLZANO and a brief sketch by STUDNICKA were published in *Casopis pro Pěstování Mathematiky a Fysiky*, vol. 11, 1882, preceding a Bohemian translation of BOLZANO's Rein analytischer Beweis..., 1817.

R. C. A.



JOHAN LUDVIG HEIBERG (1854-1928)

H. RAEDER.

Johan Ludvig Heiberg.

27/11 1854 — 4/1 1928.

Durch den Tod JOHAN LUDVIG HEIBERGS hat die Erforschung der Geschichte der exakten Wissenschaften einen schweren Verlust erlitten. Dass der verstorbene Forscher auf seinem Spezialgebiet so Grosses geleistet hat, ist um so erstaunlicher, weil er seine Tätigkeit durchaus nicht auf dieses Gebiet beschränkte. Von 1884 bis 1895 wirkte er als Gymnasialdirektor, von 1896 bis 1924 als Professor der klassischen Philologie an der Universität Kopenhagen, und seine Schüler bezeugen, dass er sich bei seinem Unterricht gewissenhaft davon enthielt seine Spezialkenntnisse unverhältnismässig stark an den Tag zu legen. Er lehrte die ganze klassische Philologie und war namentlich in allen Teilen der griechischen Litteratur ungemein bewandert. Eine reiche Fülle grösserer und kleinerer Arbeiten über griechische Litteratur und griechisches Geistesleben — auch solche, die für weitere Kreise des Publikums bestimmt waren — hat er veröffentlicht. Hier sollen aber nur die Arbeiten Erwähnung finden, die sich auf die Mathematik und Naturwissenschaften des Altertums beziehen.

Seine ersten Arbeiten galten dem ARCHIMEDES. Kaum 24 Jahre alt verfasste er seine Doktordissertation *Quaestiones Archimedeae*, die 1879 in Kopenhagen erschien. Er behandelt hier das Leben des grossen Mathematikers, gibt eine Übersicht über seine Schriften, untersucht seine mechanischen Erfindungen, seine arithmetischen Lehrsätze und den Dialekt seiner Schriften, erörtert textkritische Fragen und gibt als Probe eine Ausgabe des *Arenarius*. Schon hier zeigte er, dass er, obgleich nicht Mathematiker vom Fach, doch nicht allein die philologische Methode beherrschte, sondern auch mit allen mathematischen Fragen, die in Betracht kommen, vertraut war. Dasselbe zeigt auch seine Ausgabe von *Archimedis Opera omnia* (3 Bände, Leipzig 1880-81), die unglaub-

lich schnell verfertigt wurde, obgleich sie nicht nur auf gründlichen Handschriftstudien beruht, sondern auch von einer vollständigen lateinischen Übersetzung begleitet ist, die in der Tat als mathematischer Kommentar dient. Kleinere Früchte der Arbeiten, die mit dieser Augabe in Verbindung stehen, sind folgende Aufsätze: *Arkhimedes* (*Kort Udsigt over det philologisk-historiske Samfunds Virksomhed* 1874-76, Kopenhagen, 1877, S. 19 f.), *Nogle Puncter af de græske Mathematikeres Terminologi* (*Det philologisk-historiske Samfunds Mindeskrift*, Kopenhagen 1879, S. 1 ff.), *Einige von Archimedes vorausgesetzte elementare Sätze* (*Zeitschrift für Mathematik und Physik, Hist.-lit. Abth.* 24, S. 177 ff. 1879), *Die Kenntnisse des Archimedes über die Kegelschnitte* (ebend. 25, S. 41 ff. 1880), *Philologische Studien zu griechischen Mathematikern* (*Jahrbücher für classische Philologie Suppl.* 11, S. 355 ff.; 12, S. 375 ff.; 13, S. 541 ff. 1880-84).

Hiermit waren Heibergs Studien über Archimedes jedoch lange nicht abgeschlossen. Eine Art Nachtrag zur Ausgabe lieferte er in den *Mélanges Graux*, Paris 1884, S. 689 ff. (*Archimedis περὶ ὀχουμένων liber I Graece restituit J. L. H.*), wo er von der genannten Schrift, die nur lateinisch überliefert war, eine Rückübersetzung ins Griechische versuchte. In Verbindung hiermit stehen die Aufsätze *Et Falsum vedrörende Archimedes* (*Oversigt over det Kgl. danske Videnskabernes Selskabs Forhandlinger* 1884, S. 25 ff.) und *En gammel latinsk Oversættelse af Archimedes* (*Mindre Afhandlinger udgivne af det philologisk-historiske Samfund*, Kopenhagen 1887, S. 1 ff.); ferner *Die Archimedeshandschrift Georg Vallas* (*Philologus* 42, S. 421 ff. 1883), *Bidrag til Georg Vallas Biographi* (*Festskrift til Vilhelm Thomsen*, Kopenhagen 1894, S. 81 ff.), *Beiträge zur Geschichte Georg Vallas und seiner Bibliothek* (*Centralblatt für Bibliothekswesen* Beiheft 16. 1896), *Nachträgliches über Georg Valla* (ebend. Bd. 15, S. 189 ff. 1898). Seine Beschäftigung mit ARCHIMEDES führte ihn weiter dazu seine Studien auf die Überlieferungsgeschichte der antiken Mathematik (mittelalterliche Handschriften und Übersetzungen) auszudehnen. Hierzu gehören *Nogle Eftervirkninger af græsk Mechanik* (*Oversigt* u. s. w. 1886, S. 1 ff.), *Bidrag til Mathematikens Historie hos Byzantinerne* (ebend. 1887, S. 88 ff.), *Der byzantinische Mathematiker Leon* (*Bibliotheca mathematica N. F.* 1, S. 33 ff.), *Kleine Anecdota zur byzantinischen Mathematik* (*Zeitschr. f. Math. u.*

Phys., H.-lit. Abth. 33, S. 161 ff. 1888), *Neue Studien zu Archimedes* (ebend. 34 *Suppl.*, S. 1 ff. 1890), *Beiträge zur Geschichte der Mathematik im Mittelalter* (ebend. 35, S. 41 ff. 81 ff. 1890), *Die von Wilhelm von Moerbek benutzten Handschriften* (ebend. 37, S. 81 ff. 1892), *Les premiers manuscrits de la bibliothèque papale* (*Oversigt* u. s. w. 1891, S. 305 ff.), *Den græske Mathematiks Overleveringshistorie* (*Oversigt* u. s. w. 1896, S. 77 ff.), *Die Überlieferung der griechischen Mathematik* (*Verhandlungen der* 43. *Versammlung deutscher Philologen und Schulmänner in Köln* 1895, Leipzig, 1896, S. 27 ff. und *Zeitschrift für das Gymnasialwesen* 1896, S. 513 ff.)

Während der Vorarbeiten zu einer Neuauflage seiner Archimedesausgabe wurde HEIBERG auf einen Konstantinopolitaner Palimpsest aufmerksam gemacht, der, wie es sich zeigte, nicht nur Fragmente von vorher bekannten Werken des ARCHIMEDES, sondern auch von einigen bisher unbekannten so wie eine ganz neue Schrift, die sogenannte *Ἔφοδος περὶ τῶν μηχανικῶν θεωρημάτων*, enthielt. HEIBERG berichtete darüber in *Hermes* 42, S. 235 ff. 1907 (*Eine neue Archimedeshandschrift*), wo er die *Ἔφοδος* griechisch herausgab, während eine deutsche Übersetzung (*Eine neue Schrift des Archimedes*) in der *Bibliotheca mathematica* 3. *F.* 7, S. 321 ff. 1907) erschien mit Kommentar von H. G. ZEUTHEN. Als Nachtrag hierzu veröffentlichete HEIBERG *Δεύτεραι φροντίδες* (*Festskrift til H. G. Zeuthen*, Kopenhagen 1909, S. 63 ff.). Eine französische Übersetzung veranstaltete TH. REINACH 1907 in der *Revue générale des Sciences*, englische Übersetzungen LYDIA G. ROBINSON (*The Monist* 19, S. 202 ff. 1909) und TH. L. HEATH (Cambridge 1912) ; selbst veröffentlichte HEIBERG *Archimedes, seine Entwicklung und die Wirkung seiner Schriften* (*Das Weltall*, 9, S. 161 ff., 184 ff. 1909). Die zweite Auflage von *Archimedis Opera omnia* (Leipzig 1910-15) enthält natürlich die neuen Funde. Hierzu gehört *Archimedeum* (*Nordisk Tidsskrift for Filologi* 3. *R.* 20, S. 48. 1911). Als Abschluss seiner Archimedesstudien schrieb HEIBERG *Le rôle d'Archimède dans le développement des sciences exactes* (*Scientia* 20, S. 81 ff. 1916).

Schon früh richtete HEIBERG seine Aufmerksamkeit gegen den zweiten grossen Mathematiker des Altertums, EUKLID, über den er schon 1880 einen Vortrag hielt *Om Euklid* (*Kort Udsigt over det philologisk-historiske Samfunds Virksomhed* 1878-1880, Kopenhagen 1880, S. 15 ff.), und bald folgten seine *Litterarge-*

schichtliche Studien über Euklid (Leipzig 1882), in denen er u. a. eine bisher unbekannte Redaktion von EUKLIDS *Optica* veröffentlichte. Bei der Herausgabe von *Euclidis Opera omnia* (8 Bände, Leipzig 1883-1916) wurde ein Teil der Arbeit von H. MENGE übernommen, der aber lange nicht so schnell arbeiten konnte wie HEIBERG, was die Folge hatte, dass, während die sieben ersten Bände in den Jahren 1883-96 ziemlich rasch nacheinander folgten, der Schlussband erst 1916 erscheinen konnte. In Verbindung mit dieser Ausgabe steht die Schrift *Om Scholierne til Euklids Elementer* (*Det Kgl. danske Videnskabernes Selskabs Skrifter* 6. *R.*, *Hist. og filos. Afd.* 2, 3. Kopenhagen 1888) und ebenso *Ein Palimpsest der Elemente Euklids* (*Philologus* 44, S. 353 ff. 1885), *Overleveringen af Euklids Optik* (*Oversigt* u. s. w. 1895, S. 117 ff.). Als Nachtrag erschien *Paralipomena zu Euklid* (*Hermes* 38, S. 146 ff. 161 ff. 321 ff. 1903). Da ferner bei den *Elementen* EUKLIDS auch die arabische Tradition von Bedeutung ist, wurde durch die gemeinschaftliche Arbeit HEIBERGS und des Arabisten R. O. BESTHORN eine Ausgabe einer arabischen Übersetzung veranstaltet (*Codex Leidensis* 399 1. *Euclidis Elementa ex interpretatione Al-Hadschdschadschii cum commentariis Al-Narizii* I-III 1, Kopenhagen 1893-1911). Hierzu gehört Heibergs Aufsatz *Die arabische Tradition der Elemente Euklids* (*Zeitschrift für Mathematik und Physik, Hist.-lit. Abth.* 29, S. 1 ff. 1884). Sowohl der Ausgabe des griechischen Textes als der der arabischen Übersetzung fügte HEIBERG lateinische Übersetzungen bei. Ebenso machte er es bei der inzwischen veröffentlichten Ausgabe von *Apollonii Pergaei quae Graece exstant* (2 Bände, Leipzig 1891-93).

Eine grosse Aufgabe übernahm HEIBERG, als die Berliner Akademie der Wissenschaften ihn mit der Herausgabe von SIMPLIKIOS' Kommentar zu ARISTOTELES' Schrift *De caelo* beauftragte. Diese Ausgabe (*Simplicii in Aristotelis de caelo commentaria*) erschien in Berlin 1894. Eine Vorarbeit dazu ist *Handschriftliches zum Commentar des Simplicius zu Aristoteles de caelo* (*Sitzungsberichte der Kön. preussischen Akademie der Wissenschaften zu Berlin* 1892, S. 59 ff.).

Eine kleine Ausgabe folgte nachher, die von *Sereni Antinoensis opuscula* (Leipzig 1896), nachdem Heiberg in einem Aufsatz *Über den Geburtsort des Serenos* (*Bibliotheca mathematica N. F.* 8, S. 97 f. 1894) die Heimat und damit zugleich die Zeit dieses Mathematikers bestimmt hatte.

Kurz nachher nahm HEIBERG wieder eine grosse Aufgabe in Angriff, die Herausgabe des PTOLEMAIOS. Die Ausgabe, die sowohl die *Syntaxis* als die *Opera astronomica minora* enthält, erschien in 3 Bänden (Leipzig 1898-1907). Eine lateinische Übersetzung hinzuzufügen hielt HEIBERG diesmal für überflüssig (« de ea re videant astronomi, si interpretationem desideraverint »), aber auf Grund seiner Ausgabe stellte bald nachher KARL MANITIUS seine deutsche Übersetzung der *Syntaxis* fertig. Eine Vorarbeit war der Aufsatz *Ptolemäus De analemmate* (*Zeitschrift für Mathematik und Physik, Hist.-lit. Abth.* 40 Suppl. S. 1 ff. 1895), und in Verbindung mit ihr stehen die beiden Aufsätze *Eine mittelalterliche Übersetzung der Syntaxis des Ptolemaios* (*Hermes* 45, S. 57 ff. 1910) und *Noch einmal die mittelalterliche Ptolemaios-Übersetzung* (ebend. 46, S. 207 ff. 1911).

Nach dem Tode W. SCHMIDTS übernahm HEIBERG die Arbeit dessen Ausgabe von HERON zu einem Abschluss zu bringen, und er gab dann *Heronis Alexandrini Opera* voll. 4-5 heraus (Leipzig 1912-14) « copiis GUILELMI SCHMIDT usus ». Gemäss dem Plane der Ausgabe wurde dem griechischen Texte diesmal eine deutsche Übersetzung beigefügt. Vgl. auch *Der sogenannte Heronis liber geoponicus* (*Archiv für die Geschichte der Naturwissenschaften und der Technik* 1, S. 410 ff. 1909).

Von kleineren Arbeiten zur Geschichte der Mathematik sind noch zu erwähnen *Über eine Stelle des Pappus* (*Zeitschrift für Mathematik und Physik, Hist.-lit. Abth.* 23, S. 117 ff. 1878), *Zum fragmentum mathematicum Bobiense* (ebend. 28 S. 121 ff. 1883), *Byzantinische Analekten* (ebend. 44 Suppl. S. 161 ff. 1899), *Et mathematisk Sted hos Aristoteles* (*Oversigt* u. s. w. 1888, S. 1 ff.), *Mathematisches zu Aristoteles* (*Abhandlungen zur Geschichte der mathematischen Wissenschaften* 18, S. 1 ff. 1904), *Quelques papyrus traitant de mathématiques* (*Oversigt* u. s. w. 1900, S. 147 ff.), *Anatolius, Sur les dix premiers nombres* (*Annales internationales de l'histoire, Congrès de Paris* 1900, 5. section S. 27 ff.), *Einige griechische Aufgaben der unbestimmten Analytik* (zusammen mit H. G. ZEUTHEN, *Bibliotheca mathematica* 3. *F.* 8, S. 118 ff. 1908), *Ibn al Haitams Schrift über parabolische Hohlspiegel* (zusammen mit E. WIEDEMANN, ebend. 10, S. 201 ff. 1910), Ausgabe von *Mathematici Graeci minores* mit deutscher Übersetzung (*Det Kgl. danske Videnskabernes Selskabs Historisk-filologiske Meddelelser*

13, 3. 1927) und von *Theodosius Tripolites Sphaerica* (*Abhandlungen der Gesellschaft der Wissenschaften zu Göttingen, Phil.-hist. Klasse N. F.* 19, 3, Berlin 1927). Nach seinem Tode erschien eine Ausgabe von *Anonymi logica et quadrivium cum scholiis antiquis* (*Historisk-filologiske Meddelelser* 15, 1. 1928), Eine Übersicht über die philologische Behandlung der griechischen Mathematik, *Les sciences grecques et leur transmission*, gab er in *Scientia* 31, S. 1 ff. 97 ff. 1922). Arbeiten populärer Art, die sich auf die Mathematik beziehen, sind *Regne- og Mathematikundervisningen hos Grækerne og Romerne* (*Vor Ungdom*, Kopenhagen 1879, S. 238 ff. 339 ff.) und *Det hellige Syvtal* (*Matematisk Tidsskrift* 1925 B, S. 1 ff.).

HEIBERGS Arbeit an der Geschichte der griechischen Mathematik ist, wie man sieht, von grundlegender Art. Von den Werken fast aller bedeutenden griechischen Mathematiker hat er Ausgaben geliefert, die auf den zuverlässigsten Handschriften beruhen und nach den strengsten Regeln der philologischen Kritik ausgearbeitet sind. Weniger durchgreifend, aber doch auch bedeutungsvoll, ist seine Arbeit an der griechischen Medizin, wo er als einer unter vielen an gemeinschaftlicher Arbeit teilnahm. Nach dem Zeugnis von H. DIELS (*Die Handschriften der antiken Ärzte, Abhandlungen der Kön. preussischen Akademie der Wissenschaften* 1906, S. I) ist der erste Anstoss zur Planlegung des gewaltigen *Corpus medicorum Graecorum* i. J. 1901 von HEIBERG gegeben worden. Aber schon vorher hatte er in einer kleinen populären Arbeit, *Aphorismer om Hippokrates* (*Studier fra Sprog- og Oldtidsforskning* 2, Nr. 7, Kopenhagen 1892 — abgefasst in 1889), gezeigt, dass er auch für griechische Medizin ein Interesse hatte. Nachdem der Plan zum *Corpus* angefangen hatte eine feste Form anzunehmen, richtete HEIBERG auch zuerst seine Aufmerksamkeit gegen HIPPOKRATES und schrieb *Die handschriftliche Grundlage der Schrift περὶ ἀέρων ὑδάτων τόπων* (*Hermes* 39, S. 133 ff. 1904). Bei der Verteilung der griechischen medizinischen Schriftsteller unter die Mitarbeiter übernahm er aber den PAULOS AIGINETES, dessen umfangreiches medizinisches Werk er in 2 Bänden herausgab (Leipzig und Berlin 1921-24). Die Vorarbeiten hierzu waren recht umfassend und veranlassten den Aufsatz *De codicibus Pauli Aeginetae observationes* (*Revue des études grecques* 32, S. 268 ff. 1921); auch mit lateinischen Übersetzungen von PAULOS' Werk hatte HEIBERG zu arbeiten und gab besonders heraus *Pauli Ae-*

ginetae libri tertii interpretatio Latina (Leipzig 1912). Die Beschäftigung mit den griechischen Texten rief auch mehrere kleinere, populäre Arbeiten hervor, *Sindssygdom i den classiske Oldtid* (*Medicinsk-historiske Smaaskrifter* Nr. 3, Kopenhagen 1913; deutsche Übersetzung: *Geisteskrankheiten im klassischen Altertum*, Berlin 1927, als Sonderabdruck der *Allgemeinen Zeitschrift für Psychiatrie* 86), *Af Lægemidlernes Historie i den classiske Oldtid* (*Medicinsk-historiske Smaaskrifter* Nr. 16, Kopenhagen 1917), *Græske Sundhedsregler* (*Edda* 8, S. 1 ff. Kristiania 1917), *Antike Angreb paa Lægekunsten* (*Ugeskrift for Læger* 1918, Nr. 22), *Théories antiques sur l'influence morale du climat* (*Scientia* 27, S. 453 ff. 1920).

Nach dem Abschluss der Ausgabe des PAULOS folgte noch eine Ausgabe eines medizinischen Textes, *Glossae medicinales* (*Det Kgl. danske Videnskabernes Selskabs Historisk-filologiske Meddelelser* 9, 1, Kopenhagen 1924), und nach dem Tode von H. DIELS übernahm HEIBERG die Herausgabe eines Teiles von HIPPOKRATES' Schriften, die dieser begonnen hatte, und somit erschien (als Teil des *Corpus medicorum*) *Hippocratis Indices librorum, Iusiurandum, Lex, De arte, De medico, De decente habitu, Praeceptiones, De prisca medicina, De aëre locis aquis, De alimento, De liquidorum usu, De flatibus* (Leipzig und Berlin 1927).

Die ausgedehnten Kenntnisse, die HEIBERG auf seinem Spezialgebiet erworben hatte, und die Autorität, die er unter Fachgenossen gewonnen hatte, veranlassten, dass man es ihm bei mehreren Gelegenheiten übertrug zusammenfassende Darstellungen der Geschichte der Mathematik und Naturwissenschaften im Altertum zu geben. So verfasste er in W. KROLLS *Die Altertumswissenschaft im letzten Vierteljahrhundert* (Leipzig 1905) den Abschnitt *Mathematik, Mechanik und Astronomie* (S. 129 ff.) und in A. GERCKE und E. NORDENS *Einleitung in die Altertumswissenschaft* den Abschnitt *Exakte Wissenschaften und Medizin* (3 Auflagen 1910, 1912 und 1922), und in der Sammlung *Aus Natur und Geisteswelt* Nr. 370 schrieb er *Naturwissenschaft und Mathematik im klassischen Altertum* (Leipzig 1912, 2. Auflage 1920); von dieser Arbeit erschien eine englische Übersetzung Oxford 1922 und eine italienische Rom 1924. Auch in dem *Handbuch der Altertumswissenschaft* V 1, 2 verfasste er den Abschnitt *Geschichte der Mathematik und Naturwissenschaften imAltertum* (München 1925).

Ein naher Freund HEIBERGS war der französische Gelehrte PAUL TANNERY (1843-1904). Er schrieb einen Nekrolog über ihn in der *Nordisk Tidsskrift for Filologi* 3. *R.* 14, S. 43 ff. 1905), und in Verbindung mit H. G. ZEUTHEN gab er seine *Mémoires scientifiques* heraus (8 Bände, Toulouse et Paris 1912-27).

Wie aus dieser Zusammenstellung ersichtlich ist, besass HEIBERG eine ausserordentliche Arbeitskraft. Und obgleich er imstande war seine grossen Arbeiten unbegreiflich schnell fertigzubringen, zeichnen sie sich doch durch die peinlichste Genauigkeit aus und werden für lange Zeit für die Forscher, die auf den betreffenden Gebieten arbeiten, unentbehrlich sein.

Kopenhagen. HANS RÆDER.

EDGAR FAHS SMITH (1856-1928)
Historian of American Chemistry.
Fourth President of the History of Science Society, 1928.

C. A. BROWNE.

Edgar Fahs Smith.

Dr. Edgar Fahs Smith, Fourth President of the History of Science Society, died of pneunomia on May 3, 1928, shortly after 8:00 o'clock in the evening, in the University of Pennsylvania Hospital, Philadelphia, after an illness of only a few days. His passing removes not only an eminent chemist, a distinguished educator and a public spirited citizen, but a most enthusiastic worker in the cause of history of science. Dr. Smith had attended, only two weeks before his death, the meeting of the American Chemical Society at St. Louis, where in the best of spirits he renewed associations with his many friends and gave an address before the Historical Division upon « Some Experiences as a Teacher of the History of Chemistry ». Shortly after his return to Philadelphia a cold which he had contracted began to show alarming symptoms. His illness developed into pneumonia, from which he had suffered a serious attack two years before, and, notwithstanding all the aid which wifely devotion and medical skill could offer, his system was unable to withstand a second onset of this disease. The funeral services were held on Monday forenoon, May 7, at Holy Trinity Church, Philadelphia, and among the large number in attendance were representatives of the History of Science Society, the American Chemical Society, the American Philosophical Society, and the various other organizations of which the deceased chemist was a member. It is fitting that some reference should be made at this time in the columns of *Isis* to the life and work of Dr. Smith and to the leading part which he played in the history of science movement in America.

Edgar Fahs Smith was born on May 23, 1854, in York, Pennsylvania, where his ancestors of English and German stock had settled several generations before. The greater part of his life work as student, teacher and investigator was spent in Pennsylvania within one hundred miles of his birthplace and the intense attachment which he bore to the traditions of this historic region

was reflected in many of his writings. His early education was obtained at the York County Academy, from which he passed in 1872 to the Junior class of Pennsylvania College at Gettysburg, where he received the degree of Bachelor of Science in 1874. His father, who was a merchant, desired his son to enter business, but the boy's first ambitions were in the direction of medicine, the same career in which his younger brother, the late Dr. ALLEN JOHN SMITH (1863-1926) was later to win such great distinction.

In his work at Pennsylvania College the elder brother showed a marked inclination towards natural science, more especially chemistry and mineralogy. His professor of chemistry was the late Dr. SAMUEL P. SADTLER (1847-1923) who, noting the boy's interest in chemistry, encouraged him to visit Germany and continue his studies there. The University of Göttingen, where the great WÖHLER was still active, was at that time the Mecca of Americans who wished to complete their chemical education abroad and it was there that young SMITH spent the next two years, studying chemistry under WÖHLER and HÜBNER and mineralogy under VON WALTERSHAUSEN. Dr. SMITH was always fond, as at the recent meeting in St. Louis of the American Chemical Society, of relating incidents connected with his student life at Göttingen and with the genial WÖHLER under whom he took his doctor of philosophy degree in 1876. As is customary at German Universities with graduates who have lived to celebrate the fiftieth anniversary of their promotion to the doctorate, this degree was again conferred in 1926 by the University of Göttingen. The transmission of the diploma formed a pleasing part of the recent Golden Jubilee exercises of the American Chemical Society at Philadelphia on September 7, 1926, at the same time when the Priestley Medal was also awarded to Dr. SMITH for his distinguished services in chemistry.

Upon his return to the United States in 1876 Dr. SMITH accepted an appointment as assistant in analytical chemistry to Professor F. A. GENTH of the Towne Scientific School of the University of Pennsylvania, where he remained for the next five years. His relations during this period with Dr. GENTH and with Dr J.. LAWRENCE SMITH, who was a frequent visitor to GENTH's laboratory, are charmingly told in Dr. SMITH's review of a « Half-Century of Mineral Chemistry in America » in the Golden Jubilee Number of the Journal of the American Chemical Society.

In 1881 Dr. SMITH accepted an appointment to the Asa Packer professorship of chemistry at Muhlenberg College, Allentown, Pa., which he resigned after two years in order to become professor of chemistry at Wittenburg College, Springfield, Ohio, where he remained from 1883 to 1888. It was during this period that he published his translations of RICHTER's Inorganic and Organic Chemistries, of which the numerous editions served for several decades as text books for many thousands of American students.

In 1888 Dr. SMITH returned to the University of Pennsylvania to accept the professorship of analytical chemistry which had been vacated by the retirement of Dr. GENTH. This change brought him again into association with his former teacher Dr. S. P. SADTLER who in 1874 had left Pennsylvania College to become professor of organic and industrial chemistry at the University of Pennsylvania. In 1892 upon the resignation of Dr. SADTLER the University's department of chemistry was reorganized with Dr. SMITH at its head.

The period following Dr. SMITH's return to the University of Pennsylvania was one of great scientific productivity in which he conducted with his pupils a vast number of investigations upon methods of electro-chemical analysis, atomic weight determinations, compounds of the rarer metals and complex salts of various inorganic acids. He was a pioneer in the field of « Electrochemical Analysis » and his book upon this subject, which ran into six editions, was translated into numerous foreign languages. His work upon molybdenum attracted wide attention and his researches upon tungsten and its compounds undoubtedly paved the way for the present extensive use of this element in the arts and sciences.

Dr. SMITH's abilities as an organizer and educator were quickly recognized. In 1898 he was appointed vice-provost of the University, upon the resignation of Dr. FULLERTON, although he still retained his professorship of chemistry. Upon the resignation of Dr. C. C. HARRISON in 1911, Dr. SMITH was appointed Provost of the University, an office which he held until 1920, when he resigned both as Provost and Blanchard professor of chemistry. Under Dr. SMITH's administration the University of Pennsylvania entered upon a period of great prosperity; not only were millions of dollars raised to increase the material equipment of the institution

but there was also a great quickening in the intellectual and spiritual life of the University. Educational requirements were raised, the salaries of professors were increased and there was a general reorganization of the various schools of instruction. It has been truly said of him that he gave the University a soul.

Following his retirement in 1920 from active administrative duties Dr. SMITH found greater leisure, as Emeritus Professor of Chemistry, for promoting an interest in the humanistic aspects of chemistry, which he felt were being neglected in the predominating industrial stress of American civilization. The cultural side of chemistry had always appealed to him and at an early period of his teaching he began to give lectures upon the history of this science. His great ability as a teacher and the stimulating influence of his genial personality caused his pupils to become interested, even in the more abstruse phases of the history of chemistry, with the result that the dullest mind could absorb something of value and importance.

While Dr. SMITH's interests in the history of chemistry were general, the influence of local attachments induced him to limit his own investigations in this field to the developments of chemistry in America and more particularly within his native state. He disclaimed the title of historian and stated that the development of theories, the founding of industries and the fixing of dates did not interest him so much as the personalities of the chemists who had promoted the growth of the science. A piece of historic apparatus or an autograph letter attracted him more for the fact that upon this piece of glass or upon that sheet of paper the living hand of PRIESTLEY or of LAVOISIER once rested rather than for any novel principle of construction or statement of new theories that was involved. Dr. SMITH was a great humanist and regarded his fellow men as of more consequence than their works.

In his historico-chemical studies Dr. SMITH became, what every true student of the history of chemistry must become, an enthusiastic collector. His office in the Harrison Chemical Laboratory was without doubt the most attractive room that was ever occupied by an American professor of chemistry. Its beautiful antique furniture and other adornments were a perfect expression of his own ideals. The walls were hung with hundreds of portraits of chemists and the cases and shelves were filled with a vast assortment

of prints, autograph letters, medallions, rare books and other mementos. It was one of the most extensive collections of the kind ever assembled and a chief enjoyment of Dr. SMITH in his later years was the showing to sympathetic friends of interesting items from his treasure-house. His last published volume upon « Old Chemistries », consisting of random observations upon some fifty volumes selected from his shelves, will always serve as an example of the inspiring conversations with which he entertained his visitors. Dr. SMITH's accumulation of Priestleyana, the largest of its kind, containing PRIESTLEY's balance, the original manuscript of PRIESTLEY's « Memoirs » and many other items, was deposited by him in 1926 in the Priestley Museum at Northumberland, Pennsylvania.

The fate of the magnificent collection, which had been assembled with so much care, was a cause of some anxiety to its owner. He dreaded to think of this valuable historical material being scattered, or buried away in the dark corners of some library or museum. No more fitting tribute could be paid to Dr. SMITH than the preservation of his office and its priceless contents as a permanent memorial (1). Apart from the sentimental reasons, which appeal especially to the thousands who loved Dr. SMITH and recall the pleasant hours spent with him in that room, a memorial of this character, if made available to the use of students of chemistry and of the history of science, would be a most valuable research and educational asset. It would also serve as a reminder to future generations that there once lived in this industrial age a saintly man who held that chemistry had other messages than those of commercial values — « messages in history, in philosophy, in economics, in social relations, in art, in international relations, in literature and in a wide and extensive culture, » to quote from the concluding sentence of « Old Chemistries ».

In furtherance of the cultural aims of chemistry Dr. SMITH was influential in establishing, during his presidency of the American Chemical Society in 1921 and 1922, the two divisions of « Chemical Education » and « Historical Chemistry », of both of which he was the first chairman. His influence in these fields was far-reaching and he had the satisfaction before passing away of seeing the two

(1) A letter from Dr. J. H. PENNIMAN, Provost of the University of Pennsylvania, conveys the pleasing assurance that this will be done.

movements, which he so zealously sponsored, firmly established among many faithful followers upon a basis of continuous growth.

Dr. SMITH was one of the founders of the History of Science Society and his interest in the work of this organization was most active from the very beginning. Those who attended the annual meeting of the Society at Philadelphia in December, 1926, recall with pleasure not only his charming address upon « Methods of Teaching the History of Chemistry » but also the many hospitalities which he extended to the members on that occasion. His election as President for the year 1928 was received with unanimous approval and the interruption by death of the extensive plans which he had under consideration for advancing the work of the History of Science Society is a cause for great regret.

Dr. SMITH was a most prolific writer. He was the author, or translator of a dozen or more text books and laboratory manuals of chemistry. He published also a number of books upon the history of chemistry and many brochures upon the lives of American chemists and scientists. A partial list of the various books and monographs of which he was author, editor or translator is given in the accompanying appendix. Dr.SMITH's personality was reflected in all that he wrote. He was a master of the living phrase and his sketches of American chemists are breathing likenesses of the men whom he portrayed. At the time of his death he was engaged upon writing the life of Dr. C. M. WETHERILL, the first chemist of the U. S. Department of Agriculture. It is hoped that this last contribution from the pen of Dr. SMITH may soon be published.

Dr. SMITH cared little for marks of distinction although few scientists have been awarded so great a number of degrees, medals or honorary appointments. Only a few of the more important honors which he received can be mentioned. He was President of the American Philosophical Society from 1902 to 1906, was thrice elected President of the American Chemical Society, was a Past President of the Pennsylvania German Society (historical in character), was a life member of the Pennsylvania Historical Society and was appointed by Governor FISHER a member of the Historical Commission of Pennsylvania. He was a member of the National Academy of Sciences and an Officer of the Legion of Honor of France. He occupied the highest positions in every organization with which he was connected, whether scientific, educational, historical,

or fraternal. He also responded to the public call whether in the service of country, city or state. Among the many varied offices which he filled may be mentioned president of the Wistar Institute of Philadelphia, trustee of the Carnegie Foundation, and membership upon the Jury of Awards of the Chicago Exposition, the U. S. Assay Commission, the Pennsylvania State Council of Education and the Commission for revising the Constitution of Pennsylvania. He was appointed by President HARDING to the Board of Technical Advisors in the Disarmament Conference. He was a member of the Electoral College of Pennsylvania in 1915, but always held aloof from political activities, declining even to consider a nomination to the highest office of his State.

Finally, it may be said that Dr. SMITH was in every sense of the word a philanthropist. He gave freely of his limited resources to every worthy cause and assisted many needy students to obtain an education. He might easily have amassed a fortune from the industrial utilization of his discoveries, but he chose rather to serve his fellow men. The following note of appreciation in 1910 by Dr. J. H. PENNIMAN, who afterwards succeeded him as Provost, is a rare tribute to Dr. SMITH's wonderful uplifting influence.

« It is difficult to say in what respect Dr. SMITH is really greatest, for his personal force exerted on men has made for righteousness in their lives, his tender love of his fellowmen has caused tears to well forth from fountains that, through sin and misery, had seemed dried up, and his gentle sympathy, deep and true, with the problems and temptations of men's lives has drawn to him hundreds who might otherwise have been discouraged and beaten by the realization of their own weakness and the inadequacy of merely human strength. ».

With the advancement of age Dr. SMITH felt it necessary to discontinue many of the activities in which he was engaged, but his heart remained steadfast to the end in its love of the science to which he first pledged allegiance. Only lately he remarked that he must now let go of many things but that chemistry would be forsaken only with life itself.

The chemists of America were indeed most fortunate that they had as their friend so good and so great a man as Edgar SMITH. Men with his combined qualities of wisdom, benevolence, magnanimity and inspiring leadership come rarely among us. Upon the

pedestal of his statue on the campus of the University, which he served as Provost, are inscribed the simple words « Teacher, Investigator, Friend ». It was in acquiring friends that EDGAR SMITH won his greatest happiness and reward.

C. A. BROWNE.

(*U. S. Bureau of Chemistry and Soils*).

Additional note kindly communicated by the University of Pennsylvania. — The priceless collection of chemical memorabilia assembled by the late Dr. EDGAR FAHS SMITH has been presented to the University by his widow, Mrs. MARGIE A. SMITH, and will be preserved intact in its present setting in the Harrison Chemical Laboratory. With the acquisition of the collection which will be known as « The Edgar Fahs Smith Memorial Collection in Historical Chemistry », the University is making special arrangements to safeguard it, following which it will continue to be accessible to visitors and students of the history of chemistry; eventually, it is expected, the University will create a fund, the interest of which will be devoted to the perpetual maintenance of the collection, and additions will be made to the collection from time to time, if possible.

The collection, as presented to the University, comprises three main divisions. The first contains about 500 autographed letters and manuscripts of eminent chemists of all nationalities; the second is made up of approximately 1000 portraits, prints and engravings of prominent chemists from the days of the alchemists to the present; and the third consists of nearly 1000 books on alchemy and chemistry. In addition, there are a number of chemical preparations and a variety of chemical apparatus which Dr. SMITH had accumulated during his career as teacher and research worker, and an unusually rare collection of books and manuscripts relating to the history of the University of Pennsylvania and the lives of outstanding alumni and members of the faculty.

APPENDIX

A partial list of the books and publications of Dr. EDGAR FAHS SMITH.

Chemical Text Books and Laboratory Manuals.

CLASSEN's Quantitative Analysis, 1878.
Clinical Analysis of Urine (with JOHN MARSHALL), 1881.
OETTEL's Practical Exercises in Electrochemistry, 1897.
OETTEL's Electrochemical Experiments, 1897.
RICHTER's Inorganic Chemistry (5th Edition), 1900.
RICHTER's Organic Chemistry (3rd Edition), 1900.
SMITH and KELLER's Chemical Experimentation (5th Edition), 1902.
Electrochemical Analysis (5th Edition), 1911.
Shorter Course Chemical Experiments, 1913.
Theories of Chemistry, 1913.

Elements of Electrochemistry, 1913.
Elements of Chemistry (8th Edition), 1919.

Books on the History of Chemistry.

Chemistry in America; 1914, D. APPLETON & Cº.
ROBERT HARE — An American Chemist; 1917, J. B. LIPPINCOTT Co.
JAMES WOODHOUSE; 1918, J. C. WINSTON Co.
Chemistry in Old Philadelphia; 1918, J. B. LIPPINCOTT Co.
JAMES CUTBUSH; 1919, J. B. LIPPINCOTT Co.
PRIESTLEY in America; 1920, P. BLAKISTON'S Sons & Co.
Old Chemistries; 1927, MCGRAW-HILL Co.

Historical and Biographical Brochures.

THEODORE G. WORMLEY, *Journal of the American Chemical Society*, Vol. 19, p. 275, 1897.
ROBERT EMPIE ROGERS, National Academy of Sciences, 1905.
GEORGE F. BARKER, *American Journal of Science*, 1907.
FAIRMAN ROGERS, National Academy of Sciences, 1909.
DAVID RITTENHOUSE, 1913.
Men of Science from the Keystone State, 1914.
BENJAMIN SMITH BARTON, 1916.
The American Spirit in Chemistry, *Journal of Industrial and Engineering Chemistry*, Vol. 11, Nº. 5, p. 405, May, 1919.
Progress of Chemistry, Address before American Chemical Society, September 9, 1921.
Our Science, Address before American Chemical Society, September 6, 1922.
JAMES CURTIS BOOTH, 1922.
FRANKLIN BACHE, 1922.
SAMUEL LATHAM MITCHILL — A Father in American Chemistry. Chandler Lecture, Columbia University, 1922.
Priestleyana, 1922.
M. CAREY LEA, 1923.
JACOB GREEN, 1923.
MARTIN HANS BOYÉ, 1924.
JOHN GRISCOM, 1925.
Observations on Teaching the History of Chemistry. *Journal of Chemical Education*, Vol. 2, Nº 7, 1925.
A Half-Century of Mineral Chemistry in America 1876-1926. *Journal of the American Chemical Society*, Vol. 48, 8-a, 69, 1926.
Forgotten Chemists. *Journal of Chemical Education*, Vol. 3, Nº 1, Jan. 1926.

Fragments Relating to the History of Chemistry in America. *Journal of Chemical Education*, Vol. 3, N° 6, June 1926.

Bromine and its Discoverers. *Journal of Chemical Education*, vol. 3, N° 4, April 1926.

Early Science in Philadelphia. *Journal of the Historical Society of Pennsylvania*, 1926.

JOSEPH PRIESTLEY. (Priestley Medal Lecture) *Science*, Vol. 64, p. 317, 1926.

JAMES BLYTHE ROGERS, 1927.

A Look Backward. *Journal of Chemical Education*, Vol. 4, N° 12, Dec. 1927.

ROBERT HARE. *Archivio di Storia della Scienza* (Italy) 1927.

Iconography.

The portrait illustrating this sketch is a recent one representing Dr. E. F. SMITH in his study in the Harrison Chemical Laboratory, referred to above. Two other portraits may be found in the *Scientific Monthly* for October 1926. One of them is a very excellent likeness of Dr. SMITH holding the Priestley Medallion and the diploma which was conferred upon him by the University of Göttingen in commemoration of the 50th anniversary of his receiving his degree there. The other picture shows Dr. SMITH standing near the pedestal of the statue which was erected in his honor on the campus of the University of Pennsylvania two years ago.

Reviews

David Eugene Smith. — *Le comput manuel de* MAGISTER ANIANUS. (Documents scientifiques du XVe siècle, 4) 107 p., 32 illus. Paris, E. DROZ, 1928

Dr. SMITH, to whom we owe already so many studies on mediaeval arithmetic, has increased our debt materially by this very thorough investigation. He chose to write the results of it in French, — and very well, too — and the book is charmingly published. To many people it might have seemed that CHRISTOPHER WORDSWORTH's learned edition (The ancient calendar of the University of Oxford from documents of the fourteenth to the seventeenth century, Oxford 1904) was sufficient, but a moment's examination of SMITH's work will make them realize the latter's usefulness. For one thing, WORDSWORTH's edition reproduced a rather late one (Oxford, 1519) and his bibliography was very incomplete. He enumerated only 28 editions (including one inexistent) between 1488 and 1529, while SMITH shows that at least 59 were published during that period. I must add that, while SMITH's study corrects and completes that of WORDSWORTH, it does not supersede it, as the scope of the latter is wider.

The first edition was printed by GUY MARCHAND in Paris 1483; it was undated. The first dated edition was produced by JOH. PRYSS at Strassburg, 1488. One has the impression that SMITH did not know of the first edition, except at a relatively late stage of his investigation, for he hardly speaks of it in the text, and careless readers may be led to think that the first edition was that of 1488. One wonders why Dr. SMITH chose to base his critical edition on the second edition rather than on the first one ? As he does not offer any explanation, I surmise that the one I have just indicated is the correct one.

The subject is divided as follows : 1. Signification of the title; 2. Purpose of the compotus; 3. Who was ANIANUS ?; 4. His predecessors; 5. Bibliography of the editions of the Compotus.

A compotus (or computus) was a treatise on the calendar, which enabled one to determine the days of the week corresponding to definite dates, to know beforehand the dates of movable feasts, the phases of the moon, etc. Before the invention of printing had made possible the publication of calendars, such as we have, the practical importance

of such treatises was undoubtedly great, and the large number of manuscript compoti is natural enough. The earliest compotus to appear in print was that of MAGISTER ANIANUS (1483) and it enjoyed for many years a great popularity until the printing of calendars in increasing numbers drove it out of business. About 35 editions appeared in the fifteenth century, and nineteen more in the first fifteen years of the sixteenth century; after that there appeared only a very few editions from time to time. The popularity of ANIANUS's compotus was due largely to the fact that it was written in verse and contained many mnemonic lines (the edition of 1488 includes 243 Leonine verses; the number of verses varies a little in other editions). The word *manualis* in the title of ANIANUS's compotus must be taken literally. It was called manualis because all the explanations were based upon the use of the left hand. (For the sake of illustration, see the article by FLORIAN CAJORI : A notable case of finger-reckoning in America, *Isis* 8, 325-327).

It should be noted that before the existence of cheap calendars, compoti were needed not only by learned monks but by laymen. The proof of this is that the very first edition of ANIANUS (1483) contained already an abridged translation in French verse (120 octosyllabic lines), the text of which is given by SMITH (p. 74-78). This French text was followed more or less closely in other books, for example in that delightful *Compost et kalendrier des bergiers*, printed by the same GUY MARCHAND, in Paris 1491 (etc., see *Isis* 8, 354-55); and in the so-called *Cœur de Philosophie* (Paris c. 1504, etc).

The most interesting part of SMITH's study is the one dealing with ANIANUS himself. It was generally believed that ANIANUS lived in the fifteenth century, — or simply one did not know when he lived and he was temporarily placed together with the first edition of the Compotus. One does not yet known who this ANIANUS was or when he lived, but it is probable that he was a French monk, possibly in the Benedictine monastery of Aniane (not far from Montpellier). SMITH shows that he flourished probably in the second half of the thirteenth century or the beginning of the fourteenth. Two Mss. of the Compotus are of the fourteenth century. Another Ms. in Mr. GEORGE A. PLIMPTON's library contains a commentary on the compotus, dated twice 1384, and mentioning a series of cycles beginning in 1292. The Cœur de Philosophie above mentioned was translated into French by SYMON DE COMPIENGNE at the request of PHILIPPE LE BEL (king from 1285 to 1314).

On the subject of ANIANUS's forerunners, e.g., BEDE, SACROBOSCO, VILLEDIEU, SMITH's monograph does not offer any novelty which I noticed, but it is a very clear summary. There is no doubt that much of ANIANUS's compotus was already common good in his time; this is specially true of some of the mnemonic lines ascribed to him, for

example those (61-62) giving the number of days of each month :

Iunius, Aprilis, September, et ipse November
dât triginta dies : reliquis super additur unus

and those enabling one to remember the signs of the Zodiac (74-75) :

Est Aries, Taurus, Gemini, Cancer, Leo, Virgo...

It is needless to say that this book is very well illustrated, as the main purpose of the collection, of which it forms a distinguished number, is iconographical. GEORGE SARTON.

The Newton bicentennial commemoration

[**Sir Isaac Newton** (1727-1927)]. *A bicentenary evaluation of his work.* A series of papers prepared under the auspices of The History of Science Society, in collaboration with The American Astronomical Society, The American Mathematical Society, The American Physical Society, The Mathematical Association of America and various other organizations. Edited by F. E. BRASCH. IX + 351 p., 3 plates. Baltimore, WILLIAMS and WILKINS, 1928. (five dollars).

[**Isaac Newton** (1642-1727)]. A memorial volume edited for the Mathematical Association by W. J. GREENSTREET. VIII + 181 p., 9 pl. London, G. BELL and SONS, 1927.

Emile Picard. *Un double centenaire, Newton et Laplace.* Discours prononcé à la Sorbonne, le mercredi 4 mai 1927. 26 p. Paris, Palais de l'Institut, 1927 (reprinted in *Revue générale des Sciences*, vol. 38, 357-66, 1927).

We may take for granted that the commemoration of the second centenary of NEWTON's death has been celebrated in almost every civilized country. For was he not one of the greatest men of science who ever lived, one of the highest representatives of our race ? We would no longer sing with POPE,

Nature and Nature's laws lay hid in night :
God said, Let Newton be ! — and all was light,

yet, we would admit that no man ever did more to lift up the veils which hide the truth from our eyes. Naturally enough these commemorations have been given special importance and solemnity in the English-speaking countries, and above all in the mother country, England, and in the United States.

The main purpose of this review is to give a brief but sufficient account of the two main publications which will immortalize these memorial festivities.

The most ambitious and the most beautiful of these publications is undoubtedly the one issued by the History of Science Society (Special publication, no. 1), and edited by its very devoted secretary, FREDERICK

E. BRASCH. It is a collection of the addresses delivered at the memorial meetings held at the American Museum of Natural History, in New York, on November 25 and 26, 1927. I attended these meetings and can testify to the presence of a very large audience. Mind you, there were not less than three sessions ! The audience was especially large, as we would expect, at the first session; but it remained quite considerable until the end.

This series of lectures was very wittily introduced by the president of the History of Science Society, DAVID EUGENE SMITH, who seemed to play for a little while the part of an *advocatus diaboli*, in order to stimulate the audience. One challenge of his deserves to be quoted... « Nor have there been lacking expressions to the effect that, had he been the great genius that England asserts, his countrymen would long since have given to the public a definitive edition of his complete works, his correspondence, and his papers. Such editions are a common tribute paid by nations or societies to the memory of their great men. Why should England have published the monumental editions of CAYLEY's and SYLVESTER's works, and yet have so neglected NEWTON and have allowed the Portsmouth papers to lie practically in oblivion? Was there not, back of all the praise, the feeling that the nation had risen to his defense in an inglorious dispute, but that at heart it doubted his greatness? » It is still time to meet this challenge; and let us hope that England will before long do full justice to the most illustrious of her sons.

DAYTON C. MILLER, professor of physics in the Case School, Cleveland, who has attracted so much attention recently by his optical experiments, gave the first technical lecture, *Newton and optics*. Then, GEORGE DAVID BIRKHOFF, the Harvard mathematician, spoke of *Newton's philosophy of gravitation with special reference to modern relativity ideas*, a very sober and thoughtful summary of this, the greatest problem of our time. The Director of the Lick Observatory, WILLIAM WALLACE CAMPBELL, had come all the way from California, to explain *Newton's influence upon the development of astrophysics*. The famous inventor MICHAEL IDVORSKY PUPIN (*Isis* 7, 135-8) dealt with *Newton's dynamics*, paying full homage en passant to another Cantabrigian, JAMES CLARK MAXWELL. PAUL R. HEYL, physicist in the United States Bureau of Standards, showed in his beautiful language that NEWTON was not only a mathematician, but an *experimental philosopher*. Our leading student of celestial mechanics, ERNEST W. BROWN, of Yale University, he too a son of Cambridge, explained some of the *Developments following from Newton's work*. Though he did not wish to discuss the theory of relativity, he could not help making a brief reference to the new Einsteinian mechanics as far as it affected the laws of NEWTON, and remarked « The structure has been built up on what we thought was bed rock. It seems very pro-

bable now that it is not so. The base is still an enormous block fully capable of carrying the superstructure, but it is now seen to rest on deeper foundations. Since this discovery was made, all that has been necessary to make the block firm has been the insertion of two or three very small wedges. The change, in fact, is rather in the description given of the foundations themselves... » FLORIAN CAJORI gave accounts of *Newton's fluxions* and of another question to which I shall come back presently. LYMAN C. NEWELL, professor of chemistry in Boston University, dealt with *Newton's work in alchemy and chemistry*.

The last three lectures were in some ways the most interesting, as they contained information less generally available to the majority of Newtonian scholars. Professor GEORGE S. BRETT, of the University of Toronto, — who was the representative of Canada in this American celebration — gave a very good account of *Newton's place in the history of religious thought*. « The conclusion of the argument is that NEWTON affected the progress of religious thought in two different ways. He contributed certain special writings to the literature of theology. But in a far deeper way he affected religious thought by destroying the ancient tradition of the two worlds, celestial and terrestrial, and establishing the idea of law in the Universe as one and the same throughout. This led to a form of thought which at first seemed detrimental to religion, but was in fact a process of purification through which men learned that the idea of God and the idea of law are not antagonistic. Since that period the work which NEWTON began has continued to grow and at the present time it influences the world; for every day men are learning that worship of the Creator is more than a sabbatic ritual; it is essentially a spirit of discovery and an effort to direct desire by knowledge. » GEORGE E. ROBERTS, a New York financier and former director of the United States Mint, dealing with *Newton in the Mint*, showed that the philosopher's activity as Warden and later as Master of the British Mint (1696, 1699 to his death) was far more complex than is usually supposed. He rendered great service to his country in saving its coinage from a terrible state of confusion and degradation; on the other hand, he did not trouble himself to discuss the problems of bimetallism which were then becoming acute. Perhaps he realized that another type of mind than his was needed to solve such problems, and his mind was certainly tired, if not weakened. FREDERICK E. BRASCH's subject was *Newton's first critical disciple in the American colonies, John Winthrop*, a subject which he was well prepared to handle as he has given thought to it for a good many years. This JOHN WINTHROP, a scion of the most illustrious colonial family (1),

(1) See C. A. BROWNE : Scientific notes from the books and letters of JOHN WINTHROP Jr. (1606-76) with genealogical table of the family at the end (*Isis*, XI, 325-42).

born at Boston in 1714, Hollis professor of mathematics and natural philosophy at Harvard, astronomer, F. R. S. in 1766 (the third WINTHROP to be thus honored), one of the founders of seismology (1755), died at Cambridge, Mass., in 1779. He may be called one of the fathers of American science; the introduction of Newtonian philosophy in the New World was one of his achievements. But can it be true that the *Principia mathematica*, first printed in 1687, did not reach America until 1714 ? Was Colonial America as remote from the Republic of Letters as that ? At any rate, BRASCH's account will interest equally Americans, because it tells one of the earliest episodes of our scientific history, and Europeans, because it will be so novel to them.

I have reserved for the end FLORIAN CAJORI's paper on *Newton's twenty years' delay in announcing the law of gravitation* (p. 127-88), because it is by far the most notable contribution from the point of view of the history of science. The other papers are interesting and valuable, but are not intrinsically new. On the contrary this paper of CAJORI's is the fruit of very painstaking investigations, a true addition to our knowledge. This volume will be indispensable in any Newtonian collection chiefly because of this paper. Why did NEWTON delay the publication of his theory of gravitation from 1666 to 1686 ? The traditional explanation is that he was impeded by wrong geodetic measurements and that he had to wait until the better data supplied by JEAN PICARD (1671) had become available. This plausible account, being properly embellished with romantic details, may be said to have held the ground until now (2), in spite of the fact that J. C. ADAMS and J. W. L. GLAISHER began to shake our confidence in it as early as 1887-88 (see CAJORI, 1922; *Isis* 5, 228). They stated that the real cause of the delay was the question how a sphere attracts an outside particle. However their proof was not complete, and CAJORI may be said to have now for the first time clinched it. In order to do this he made a searching study of what was really known in England respecting the size of the earth before PICARD made his measurements, and subjected the entire question of NEWTON's delay to a critical examination.

The American commemoration was properly completed by a very rich exhibition of Newtoniana, which had been mainly contributed by DAVID EUGENE SMITH, the Babson Institute in Wellesley, Massachusetts, and GEORGE A. PLIMPTON. It was in every respect a great succes which is much to the credit of our young History of Science Society. We owe special gratitude to the organizers, FREDERICK E. BRASCH and DAVID EUGENE SMITH, to the many scientists who abandoned their other duties to pay tribute to NEWTON's memory, and to FLORIAN CAJORI,

(2) Witness, e.g., EMILE PICARD's lecture mentioned below.

thanks to whom, this handsome volume will retain a permanent value.

* * *

The English volume is very different from the American in many respects. For one thing, the latter is essentially a collection of addresses which were meant to interest an educated but technically untrained audience. Thus the American volume is far more readable than the English. On the other hand, the English memorial volume was edited by W. J. GREENSTREET for the Mathematical Association, and, as a matter of fact, it was first planned to be included in the *Mathematical Gazette*, in the form of a special number. Thus many papers are severely technical. This is a disadvantage from one point of view, but an advantage from another; fewer people will read the English volume, but those few will get more out of it than out of the larger American publication.

It is well that NEWTON's memory was celebrated in these two different ways, for these two volumes will satisfy different publics, and thus each will complete the task which the other left unfinished. I may add that the English volume, though less beautifully printed, contains more plates, and more interesting ones (9 against 3).

I quote the papers of the English volume adding a few observations :

A. S. EDDINGTON : Absolute rotation.

H. E. ARMSTRONG : The forms of carbon and chemical affinity (Largely irrelevant in the usual ARMSTRONG vein).

D. E. SMITH : Two unpublished documents of Sir ISAAC NEWTON. (See *Isis*, 10,166).

J. L. E. DREYER : Letters from NEWTON in Corpus Christi College, Oxford.

D. C. FRASER : NEWTON and interpolation.

E. T. WHITTAKER : NEWTON's work in optics.

A. R. FORSYTH : NEWTON's problem of the solid of least resistance.

J. PROUDMAN : NEWTON's work on the theory of the tides.

J. J. MILNE : NEWTON's contribution to the geometry of conics.

H. HILTON : NEWTON on plane cubic curves.

J. M. CHILD : NEWTON and the art of discovery.

A. E. HEATH : NEWTON's influence on method in the physical sciences.

L. J. RUSSELL : Plagiarism in the seventeenth century, and LEIBNIZ. (Largely based upon DIETRICH MAHNKE's investigations, 1926, for which see *Isis* 9, 160).

E. A. BURTT : The contemporary significance of NEWTON's metaphysics.

J. A. HOLDEN : NEWTON and his homeland; the haunts of his youth. (The author of this paper is Senior mathematical master of NEWTON's old school, the King's School, Grantham).

G. N. WATSON : Trinity College in the time of NEWTON.

H. ZEITLINGER : A NEWTON bibliography. (This is hardly more than a summary, but a useful one. Two sections of it are particularly interesting, one dealing with NEWTON's library of which a large part was unwittingly dispersed in 1920; the other with the « paradoxers », who tried to give mystical explanations of the law of gravitation. Every great discovery gives thus rise to popular interpretations or misinterpretations. The same thing is happening now with regard to the theory of relativity).

D. E. SMITH : Portraits of Sir ISAAC NEWTON; the portrait medals of NEWTON. (Two excellent accounts based upon the author's own extensive collections which those who took part in the American celebration had a chance to admire. SMITH is the only author who contributed to both volumes.)

J. L. E. DREYER's paper is only a part of his intended contribution. It is typical of the honest man he was, that a few days before his death, he caused his daughter, Mrs. SHAW-HAMILTON, to write to the Editor as follows : ...« His illness has taken a very serious turn, and he has now only a very short time to live. He asks me to write and tell you this, and how very much he regrets that after all he will not be able to write on the subjects he had arranged with you to undertake. He asks me to send you... copies of letters from NEWTON to FLAMSTEED, from Corpus Christi College, Oxford, and to say how much he hopes that good use will be made of them. » Every Editor, who knows by bitter experience how easily some contributors forget their promises (as if making them was sufficient), will appreciate the kindness of this message.

* * *

There is still one difference between the English and the American volume which I should like to point out, though some of our readers may think it futile. The English book is entitled : « Isaac Newton »; the American, « Sir Isaac Newton. » The English title is much better; the American, in my opinion, a lack of taste. When our friend John Doe is knighted, we rejoice with him and congratulate him, and we are only too glad to « Sir John » him to his heart's content; nor do we fail to pay our respects to Lady Doe. There is no doubt that Sir John sounds more noble than Mr. John Doe, and Lady Doe is incomparably more distinguished than Mrs. Doe. But the matter takes an entirely different aspect in the case of men who are great in their own right. To attach a Sir to as great a name as NEWTON's, does not increase its prestige, but on the contrary seems a little ridiculous. I remember a teacher who punished me for having called the poet BOILEAU (whom I cordially detested), Monsieur Nicolas Boileau. Teacher was right. And in the same way it is better to leave NEWTON in his own sphere,

far above ordinary knighthoods and lordships, in fact far above the very kings who bestow these factitious honors with such partial generosity.

* * *

Many more papers devoted to the celebration of NEWTON's memory will be found in our bibliographies (in the section devoted to the second half of the seventeenth century, chiefly under A), for example the many interesting ones which were published in *Nature* (vol. 119, Supplement, p. 21-48). It would take too much space to quote them here, nor is it necessary. But I wish to make an exception of the address delivered by EMILE PICARD at the Sorbonne, in spite of the fact that it contains nothing novel and repeats old errors. PICARD's address is especially memorable for two reasons. In the first place it was so-to-say the official tribute of a friendly nation. There are many common Newtonian memories between England and France. VOLTAIRE attended NEWTON's funeral and kept a vivid remembrance of it to the end of his days; he gave a popular account of Newtonian philosophy. The MARQUISE DU CHÂTELET translated the *Principia*. NEWTON's task was largely completed during the eighteenth century by French geometers. In the second place, one of the greatest successors of NEWTON, LAPLACE, died almost exactly a century later. NEWTON died on March 20, 1727; LAPLACE, on March 5, 1827. It saddened me a little not to find a single mention of this in either volume; it would have been so appropriate, yet strangely enough nobody seems to have thought of it.

Let us thus close this long review by the expression of our deep gratitude to NEWTON, — to LAPLACE, and to their intellectual descendants, who have written together some of the most glorious pages of human history.

GEORGE SARTON.

Fernand Laurent. — *Jean Sylvain Bailly, premier maire de Paris.* VIII + 460 p., ill., BOIVIN et Cie, Paris, 1927.

Volume écrit par un conseiller municipal de Paris à la gloire du premier maire de Paris. JEAN SYLVAIN BAILLY (Paris, 1736, 09, 15 — Paris, 1793, 11,11) l'astronome, l'élève puis l'ami de LA CAILLE et de CLAIRAUT, l'ami de LAPLACE, fut en effet élevé par la voix populaire, et un peu malgré lui, à la première magistrature de Paris le 15 juillet 1789, en même temps que LA FAYETTE était proclamé commandant général de la milice municipale. Le savant n'était pas préparé à jouer ce rôle politique. Il y apporta sa conscience droite et scrupuleuse, un peu timorée sans doute, et une belle grandeur d'âme. Et sous la Terreur, la même voix populaire qui avait mis la couronne sur sa tête, « comme un hommage à toutes les vertus de l'homme juste qui avait le premier présidé l'Assemblée nationale de 1789, et jeté les premiers fondements de la liberté française » (dit

le procès verbal de la séance), cette même voix populaire le conduisait à l'échafaud. Près des trois quarts de l'ouvrage de F. LAURENT est consacré au rôle politique de BAILLY au milieu de l'atmosphère agitée du Paris de la Révolution.

Ce grand personnage politique, fils, petit fils d'artiste, voué dès son plus jeune âge à la carrière de conservateur des tableaux du roi, s'exerça d'abord à la tragédie ! Mais voilà qu'un ami de son père, Mr. DE MONCARVILLE, lui apprend les rudiments des mathématiques, qu'il est présenté à l'abbé NICOLAS DE LA CAILLE, justement célèbre pour ses travaux de géodésie (mesures pour la méridienne de l'observatoire de Paris, mesure d'un arc de méridien au Cap, levé de la carte des Iles de France et de Bourbon), et que LA CAILLE le présente à son tour à CLAIRAUT. BAILLY abandonne la direction qu'on voulait lui faire suivre et devient astronome. Il installe au Louvre où son père était logé de par sa fonction, un observatoire qui comprenait une lunette méridienne, un sextant, un quart de cercle, une machine parallactique (équatorial). Il observe Mars lors d'une opposition, la comète de 1759 (*Mémoire sur la comète de* 1759). En 1761, il travaille avec LA CAILLE à l'observatoire du collège Mazarin. En 1763, un an après la mort de LA CAILLE, il publie un *Catalogue de* 515 *étoiles zodiacales* observées par son maître en 1760 et 61, mais avec des erreurs qui tiennent à ce qu'il était un calculateur médiocre. Son principale titre à l'estime des gens de métier réside dans des recherches sur les satellites de Jupiter,à quoi il appliqua la théorie lunaire de CLAIRAUT. Après son *Essai sur les satellites de Jupiter, avec les tables de leurs mouvements* (1766), BAILLY n'eut plus guère le temps de se livrer à des observations. Devenu membre de l'Académie des sciences, il aspirait à en être le secrétaire perpétuel, et pour essayer d'y parvenir, il prit part à de nombreux concours académiques (Éloges de CHARLES V, de CORNEILLE, de LEIBNIZ, etc.), qui ne lui donnèrent d'ailleurs pas le poste qu'il enviait. Puis il publia successivement : *Histoire de l'astronomie ancienne* depuis son origine jusqu'à l'établissement de l'école d'Alexandrie (1781), *Histoire de l'astronomie moderne* depuis la fondation de l'école d'Alexandrie jusqu'en 1782 (3 vol., 1785); *Histoire de l'astronomie indienne et orientale* (1787) où son esprit romanesque se donne libre cours, moins cependant encore que dans ses *Lettres sur l'origine des sciences et sur celle des peuples de l'Asie* (1777), adressées à VOLTAIRE, où il est question d'un peuple primitif ayant vécu de longs siècles au centre de l'Asie, cultivant et perfectionnant les sciences, et de qui tous les peuples connus auraient tiré leurs connaissances; enfin, ses *Lettres sur l'Atlantide de Platon* (1779), qui appartiennent aussi au roman, et non à la science. Les contemporains savants de BAILLY ne se trompaient guère sur la valeur de cette histoire de l'astronomie : « Le rève de BAILLY sur ce peuple ancien qui nous a tout appris, excepté son nom et son existence, me parait un des plus

creux qu'on ait jamais eus » (D'ALEMBERT). L'histoire de BAILLY, dit DE LALANDE « contient beaucoup de phrases, d'hypothèses et de dissertations. Je lui représentai, dès les commencements, qu'il pourrait employer son temps plus utilement pour l'astronomie ». A l'exception peut-être de FRANÇOIS ARAGO, la postérité a pleinement ratifié ces jugements. — La partie de livre de F. LAURENT qui traite de BAILLY astronome est assez confuse. Aucune indication bibliographique. L. G.

O. Gillain. — *La Science Égyptienne. L'Arithmétique au Moyen Empire.* 16 + 326 pp. Édition de la Fondation Égyptologique Reine Élisabeth, Bruxelles, 1927. (16.75 belgas, outside of France and Belgium).

Our knowledge of Egyptian mathematics is chiefly drawn from hieratic, hieroglyphic, demotic, and Greek documents of the period 2000 - 1000 B. C. A huge Hierakonopolis mace of 3500 B. C., at Oxford, is, however, important for showing large numbers in hieroglyphic writing, which prove that the decimal system was the basis of Egyptian arithmetic nearly 5500 years ago. There are also at least 15 Greek, demotic, and Coptic documents of the period 100-1000 A.D. which are of interest in any thorough study of Egyptian mathematics.

Among all of these documents (1) those of the golden period of Egyptian mathematics, namely 1900-1600 B.C., are of outstanding importance. They include two large mathematical papyri : the Golenishchev papyrus dating from about 1850, in the Museum (2) of Fine Arts at Moscow; and the Rhind papyrus, in the British Museum, dating from about 1650 B.C. The latter is a copy of an older document probably contemporary with the Golenishchev papyrus; it has been studied very extensively and is the chief source of our knowledge regarding Egyptian arithmetic. Elaborate studies of the whole papyrus were published by EISENLOHR (1877), and PEET (1923). In 1912 Chancellor CHACE of Brown University started to prepare a new work of a similar character, with mathematical commentary and free translation in volume 1, and in volume 2 (among other things) : the original hieratic of the papyrus with hieroglyphic transcription, transliteration, and literal translation, together with a photogravure facsimilie of the whole (the first to be made). Volume 1 was printed nearly a year ago but its distribution is being held until the second volume is also ready, in the near future.

Mr. GILLAIN's work is a survey of Egyptian arithmetic from the point of view of the mathematician. The bulk of the work is contained in an

(1) For their list, and of sources regarding them see my « Bibliography of Egyptian Mathematics [1706-1927] », pages 121-206 of A. B. CHACE, *The Rhind Mathematical Papyrus*, vol. 1, 1927.

(2) Fragments in the New York Historical Society.

Introduction (pp. 1-22) and four chapters (pp. 23-317). In the Introduction several pages are devoted to an exposé of the number-mysticism, connected with the pyramids, as found in the writings of the astronomers BAILLY (1787) and PIAZZI SMYTH (1864), and more recently, in Abbé TH. MOREUX, *La Science mystérieuse des Pharaons*, Paris, 1923, and CH. LAGRANGE, *Sur la concordance qui existe entre la loi historique de* BRÜCK, *la chronologie de la Bible et celle de la Grande pyramide de* CHÉOPS, 1924. GILLAIN then follows PEET in listing five mathematical documents of the Middle Kingdom: the Golenishchev and Rhind papyrus, the Kahun papyri fragments (hieratic, c. 1850 B.C.) in London, the Akhmîm tablets (hieratic, c. 2000 B.C.) in Cairo, and the Thebes papyrus 6619 (hieratic, c. 1850 B.C.) in Berlin. He follows PEET also in overlooking the British Museum mathematical leather roll 10250 (hieratic, c. 1650 B.C.) whose contents were recently made available (3) to scholars, more than 60 years after its acquisition. PEET's table of contents of the Rhind papyrus is given, and among documents in the first millenium of the Christian era, the Akhmîm papyrus (Greek, c. 650) in Cairo is described at some length. The Introduction concludes with the display of hieroglyphic signs for numerals, and general comments on the Rhind papyrus.

The first chapter (pp. 23-89) contains a discussion of Egyptian methods of performing the operations of addition, subtraction, multiplication and division, with constant quoting of actual examples.

The Rhind papyrus opens with a table of the equivalents of 2 divided by each of the odd numbers, 3,..., 101, in terms of the sum of fractions with numerators unity. Many writers have endeavored to discover the laws of formation of this table. PEET's discussion in this connection is wholly inadequate. To the discussion of this and of similar tables in other documents, GILLAIN gives up the 107 pages of Chapter 2. No account is here taken of the very interesting recent doctoral dissertation of NEUGEBAUER, somewhat enlarged in his *Die Grundlagen der Aegyptischen Bruchrechnung*, Berlin, 1926.

In the third chapter (pp. 208-283) are discussed such topics as Rule of three, False position, Proportion, Progressions, Square and square root, as they arise in connection with various problems. The author emphasizes that algebra is not anywhere in the thought of the author of the Rhind papyrus. And yet in GILLAIN's discussion of the arithmetic progression in Problem 64 of the Rhind papyrus and in the geometric progression of Problem 79 there is a suggestion of contradiction of this thought. NEUGEBAUER's interpretation (*l.c.*) of 79, leading only to multi-

(3) *British Museum Quarterly*, vol. 2, no. 2, 1927 and *Journal of Egyptian Archaeology*, 13, 232-239, 5 plates, 1927.

plications, is certainly the correct one. May not an almost equally simple explanation which does not involve supposing a knowledge of any formula, be given for 64 which may be enunciated as follows : « Example of determining an arithmetical progression. Suppose it is said to thee, Distribute 10 hekat of barley among 10 men in such a way that the shares shall be in arithmetical progression with a common difference of 1/8 hekat. What is the share of each ? » If one man had 1 hekat, the second 1 1/8 hekat; the tenth would have 2 1/8 hekat, total 15 1/2 1/8 hekat, 5 1/2 1/8 too much. The required portions would therefore be got by subtracting 1/10 of 5 1/2 1/8 = 9 × 1/16 = 1/2 1/16 from each of the numbers 2 1/8, 2, 1 7/8,... , 1. But 2 1/8 minus 1/2 1/16 equals 1 1/2 1/16 the highest term. Hence the highest term is got by adding to 1 (the average shares 3 one tenth of 10) 9 times one half the common difference, which is the solution given by the problem.

The fourth chapter (pp. 284-317) deals with a number of interesting general questions. Some conclusions may be quoted :

(a) « Et c'est pourquoi le papyrus Rhind, qui n'est pas un manuel authentique, est pourtant fait sur le modèle d'un traité didactique. C'est l'ouvrage d'un homme dont les souvenirs d'école sont restés assez vivaces pour qu'ils aient pu être réunis en un ensemble coordonné; ouvrage imparfait sur lequel le maître absent n'a plus qu'une influence lointaine et où l'ordre règne au milieu du désordre. Une classification générale satisfaisante, une logique indéniable dans la succession des exemples, une gradation visible dans la difficulté des procédés; mais, de-ci de-là, un problème qui n'est pas à sa place, une façon de faire qui détonne parmi ses voisines, une embûche dont on sent bien que le calculateur ne s'est pas tiré tout seul. En revanche, il a fait œuvre personnelle puisqu'au lieu de copier servilement le manuel, il n'y a fait que des emprunts désespérés. »

(b) « Il y a donc des règles derrière les calculs des papyrus. Nous en avons énoncé bon nombre et, si nous les rassemblons, nous constaterons qu'elles forment un tout homogène, harmonieux et complet. Ceci est la cause seconde du phénomène : les opérations se ressemblent parce qu'il y a des règles; les règles se coordonnent parce qu'elles font partie d'une arithmétique organisée et rationnelle. »

(c) « La science grecque n'est pas la source primordiale. Celle-ci se trouve plus loin dans le passé. Il faudra, pour la trouver, sonder d'abord le mystère égyptien, et cela ne peut se faire, à l'heure actuelle, qu'en jetant bas le postulatum de PLATON (4) et en remettant sur le métier le problème, prématurément abondonné, des origines de la mathématique grecque. Peut-être réussira-t-on ainsi à atteindre un double but : étendre

(4) « Les Égyptiens sont un peuple de marchands. »

un chapitre trop court de l'histoire et reconstituer, par la part d'héritage que la science grecque en a perçue, le patrimoine scientifique de l'ancienne Égypte. »

(d) « L'arithmétique égyptienne n'est ni plus ni moins qu'une physique des nombres. » There is a brief bibliography, an index and a pleasant 12 page preface by the late Father BOSMANS.

Mr. GILLAIN has written a very interesting, readable, and thoughtful book to which everyone wishing to be well informed with regard to Egyptian mathematics will naturally turn. The work does not contain a great deal that is new, nor are the authorities quoted always the best, but the material is arranged effectively, and the fluent style secures sustained attention.

April, 1928. RAYMOND CLARE ARCHIBALD.

L. S. Berg. — *Istoria geograficheskago oznakomleniya s Yakutskim Kraem* (History of the geographical acquaintance with the Yakutsk region) pp. 1-38 in « Yakutiya » — Sbornik Statei (collection of articles), published by the Academy of Science, Leningrad 1927.

This well written and harmoniously organized article forms a fragment of the larger history of the exploration of Siberia. The Yakutsk region, now an autonomous Socialist Soviet Republic, was once an administrative subdivision of Siberia; its history is closely integrated with that of Siberia as a whole. Many ancient documents are quoted and there are numerous references to more recent source materials and secondary works. The author describes the gradual eastward and northward advance of the Russians to the shores of the Pacific and Arctic Oceans; Cossacks and merchants, at first; later, explorers and scientists.

The narrative opens with the beginning of the seventeenth century (1619), when Russians first obtained information about the Yakuts and the region inhabited by them. The Yakut tribe, pressed by the Mongol-Buryats, probably entered the water shed of the Lena in the thirteenth or fourteenth century, driving out the Tungus, who had previously occupied the region. Consideration of these events is followed by an account of the Yukagirs and Chukchi.

The reader cannot fail to be impressed by the far-reaching effects of the first advance of the Russians. Enticed by reports of furs in the forest regions and of wealth to be derived from mammoth and walrus ivory on the shores and islands of the Arctic, these pioneers in the short space of 25 years (1620-1645) explored the immense area comprising the water sheds of the Lena, Olenek, Yana, Indigirka, Alazeya, and Kolima. For each expedition a detailed report accompanied by sketches was prepared at the request of the authorities.

On the basis of the geographical material thus accumulated there was

compiled as early as 1667 a rough sketch map of Siberia « Chertej Sibirskiye Zemli » (sketch of the Siberian Land), the work of PETER GODUNOV, voevoda of Tobolsk. This, the first Russian printed map, was soon followed by others, all of which reflect the abundance of geographical information, relating to Siberia, and available in Moscow at the end of the seventeenth century (1). Further details regarding this sketch map and the cartographical work carried out subsequently are given by the same author in his article « Izvestiya o Beringovom Prolive i ego beregakh do Beringa i Kuka », pp. 77-142 (Information about the Bering Strait and its coasts before Bering and Cook) in *Zapiski po Hidrografii*, vol. 2 (XLIII), pt. 2, 1920, Petrograd.

Immediately after their arrival at the sea coast the pioneers undertook hazardous voyages along the Arctic coast, in the course of which the Medveji and New-Siberian Islands were discovered, the latter by a bold Cossack, MERCURI VAGIN, in 1711-1712, who tragically gave up his life in the cause of exploration. VAGIN, his son, and two loyal followers were all murdered by their own men, who feared a repetition of the hardships and sufferings they had experienced on the first expedition under their chief and had no desire again to follow him in the field.

The first period of reconnaissance was followed by one in which scientific aspects of exploration were more in evidence. This period began with the second Kamchatka expedition of BERING. Again the reader is impressed by the enormous amount of work done in a very short time. The entire north coast of Russia from the White Sea to Cape Baranov, east of the Kolima River, a distance of more than 3000 miles was mapped in no more than ten years. The credit for this is due to the energy of the lieutenants PRONCHISCHEV, the brothers DMITRI and KHARITON LAPTEV, CHELYUSKIN, etc... In view ot the very inadequate means available for the provisioning and equipping of the expedition, this achievement is truly astonishing.

According to the author : « There is a rumor that the first who dared to navigate from the mouth of the Kolima River to the east was a man from Mezen River, ISAI IGNATIEV, who in 1646 navigated two days eastward to the *bay inhabited by the Chukchi*. » This exploit would have occurred two years before the famous voyage of the Cossack SEMEN DEJNEV.

(*American Geographical Society*). N. TRANSEHE.

William Morris Davis. — *The coral reef problem.* (American Geographical Society, special publication no. 9) Shaler Memorial Series. VI + 596 p., 227 fig. New York, American Geographical Society, 1928. (six dollars).

(1) See *Isis*, 4, 87 apropos of JOHN F. BADDELEY (1919).

The coral reef problem is a good example of the synthetic type of problems which modern science has to solve. For its complete elucidation implies the cooperation of geographers, geologists, mineralogists, zoologists, botanists, and oceanographers. DAVIS's very elaborate study is almost exclusively physiographic, the importance of this special point of view being justified by him as follows : « The biology and especially the symbiosis of the reefs are unquestionably important subjects in themselves, but the opportunity for the establishment and growth of reefs is so largely determined by the physiographic conditions of insular and continental coasts, over which reef-building organisms have no control, that those physiographic conditions necessarily assume the leading role in the problem under discussion. »

His interest in this subject was stimulated when he realized that DANA's discovery (1849) — namely, the indication of subsidence given by the embayments in the central volcanic islands of barrier reefs — confirmed DARWIN's theory in a very remarkable way. In 1914, he visited thirty-five reef-encircled Pacific islands and a long stretch of the Queensland coast back of the Great Barrier Reef of Australia; after a long period of study and meditation, he visited in 1923 the Lesser Antilles, where « the peculiar features expectable on marginal-belt islands were found to be developed in the most striking manner. For there the reefs, mere timid Postglacial novices standing well back from the outer margin of their banks, were found to be strongly unlike the stalwart veterans of the true coral seas in the Pacific. » The examination of so many types of coral reefs made him deeply realize that « reefs should be classed not only according to their kind, as fringing, barrier, and atoll reefs, but also according to their stage of broadening, as young and narrow, as mature and broad, and even as old when they are converted into plains. »

DAVIS' book is important for the historian of science, because the whole of the first part (141 p.) is devoted to a detailed criticism of all previous theories, beginning with that of DARWIN. It will be remembered that DARWIN's conclusions were generally accepted between 1840 and 1870, but then became discredited until 1910. DAVIS' work is essentially a vindication of DARWIN's, with some qualifications. « Although his argument was not complete, the chief factors that he failed to perceive give unqualified support to his theory when they are recognized; and two additional factors - the changes of sea level and of sea temperature in the Glacial period, of which he can have had no knowledge whatever — far from invalidating his views, merely supplement and enlarge them. »

This volume gives us a new illustration of DARWIN's genius. What is scientific genius ? It is mainly the faculty of seeing at once the essential of a problem, plus, of course, the ability and persistence which are needed to solve it, — but the faculty of seeing the essential at once is

a *sine qua non* condition, otherwise one's effort is wasted. Mind you, DARWIN's experimental basis was but slight, for he had studied only one good barrier reef, that of Tahiti, and had visited only one atoll, Keeling. Yet his theory was amazingly comprehensive — far more than we realize, for most people know it only in a highly simplified form.

DAVIS' memoir is beautifully illustrated by means of photographs, charts, diagrams and sketches. It is an important contribution to the subject and to its history, yet the problem is not yet entirely solved and the atolls are still « inscrutable structures ». GEORGE SARTON.

F. E. Williams. — *Orokaiva magic*. With a foreword by R. R. MARETT. XII + 231 p., 9 ill. Oxford, University Press, 1928.

This is a collection of three studies of a primitive people, the Orokaiva, established in the northern division of Papua (a territory of the Australian Commonwealth).

One of them is a study of *Orokaiva magic*, which is an interesting contribution to that inexhaustible subject, magic and her twin sister taboo. I notice that the author uses the word magic to designate « those obviously futile observances of primitive society which aim at results in an apparently symbolic manner ». This seems to me a very practical definition. It implies a true distinction between spontaneous magic, and one which has become conventional. More exactly the author recognizes three stages (1) magic is in origin spontaneous and unthinking; (2) it becomes customary and is believed to be effective; (3) the reason for its effectiveness may call for some explanation from those who practice it. He shows that magic, though irrational, is not illogical; that is, it has its own logic or pseudo-logic. Much of it can be derived from two intuitive magical laws, the Law of Similarity (« like produces like ») and the Law of Contact (« things which have once been in contact with each other continue to act on each other at a distance after the physical contact has been severed. ») The only way of curing the belief in magic and its terrible corollary the fear of magic is education, a process which is infinitely slow and laborious. « The process indeed is, so to speak, asymptotic and the actual end of it probably beyond attainment. Nevertheless as the work of education continues, as the native grows increasingly familiar with causes and effects as we see them, we may expect him little by little to find out and correct the falsity of his own ideas. »

Another study is devoted to *The garden culture of the Orokaiva*; a good part of it deals with a special kind of magic, — garden magic. There is much in this to interest the student of primitive botany, but I have no time to dwell upon it. Indeed, these two studies are valuable, but I would not have thought of reviewing them in *Isis*. However the interest of the third one, entitled *The Taro cult; a study of primitive religious*

movement, transcends considerably its particular field and assumes a philosophical importance.

The facts investigated are the apparition of a new religion and its rapid diffusion within a relatively short time. « It was probably in the year 1911 that a native of Tufi, climbing Mount Victory alone, encountered a snake, and learnt from its mouth some strange facts of life and rules of conduct. Like MOSES he went down from the mount unto the people and imparted to them his new knowledge. The snake was named *Baigona* and was, in true accord with the common doctrine of life after death among those people, a reincarnated spirit of the dead. Not only he, but all snakes were henceforward to be called *Baigona* and were to be treated with affection and respect. They must be hailed and welcomed whenever they were seen; to kill or eat them was forbidden. These taboos extended to a number of other creatures — lizards, crocodiles, cuscus, and the like — all of which, in native belief, are commonly the reincarnations of departed spirits. » This *Baigona* cult did not last long, but was very soon replaced by another movement, the *Taro* cult, to which the present study is specially devoted. Taro (*Caladium colocasia*) is the staple food of the Orokaiva, who are like most of the people of Papua almost wholly dependent on their gardens. The Taro cult came into existence some fifteen years ago through the visions of an individual who believed himself possessed actually by the spirits of the taro. It began as a worship of the taro; though the ritual remained substantially the same, the worship was gradually intended for a placation, not only of the taro spirits, but of the spirits of ancestors or departed relatives who are believed to control the growth of the taro. It is thus at once a fertility cult and a cult of the dead.

WILLIAMS gives an elaborate description of the Taro, which should be of great value to the psychologist and the student of religious experience. For example, the Taro men exhibit extraordinary shaking fits, which are very contagious; they also exhibit curious phenomena of glossolalia (gift of tongues). I cannot conceive anything more interesting than the birth and babyhood of a new religion, but it is not necessary to go to Papua to witness that. We could witness it here in Boston not so many years ago, and MARY BAKER EDDY, who died as late as 1910, is the author of a book, *Science and Health*, which a large number of civilized people place on the same level and treat with the same respect as the Bible. Many other examples could be quoted, but the point upon which I wish to insist is that the birth of a new religion in a civilized country, and especially in one which is relatively new and unstable, as America, is a commonplace phenomenon as compared with the same occurence among primitive people. Modern man is not afraid of novelties, but ever on the look out for them; — on the other hand we had been led

to believe that primitive man is exceedingly conservative. « The almost absolute stability of native custom has been practically a maxim of anthropology. » Now this Taro cult is undoubtedly a new and autochthonal development.

This means that we are obliged to revise our views on the progress and diffusion of culture. One may object that this religious revolution was probably stimulated by the profound cultural disturbances caused by the white man. Granted, but it was nevertheless original. The arrival of the white man induced a cultural instability, but if so, other catastrophies may have acted in the same way in the past. Think of wars, razzias, famines and pestilences. Thus instead of conceiving the growth of culture as a very continuous and steady progress, it seems necessary to admit that true cultural *mutations* (this happy comparison is the author's own, p. 79), may spontaneously occur at critical times within the most homogeneous groups.

This excellent work is informed throughout by the new spirit of sympathy with primitive people, which is one of the finest fruits of modern science. The wish to enforce an alien culture upon them or to convert them, gently or otherwise, to our religion and our own views, is being gradually replaced by the wish to help them to progress according to their own genius. One is now trying hard to destroy the superstitions which obscure and blight their lives, without increasing unbearably the *taedium vitae*; a very difficult problem, but kind hearts will eventually succeed in solving it. It is this new brotherly spirit which inspired the « mandate » system, witness the injunction « The mandatory shall promote to the utmost the material and moral well-being and the social progress of the inhabitants of the territory. » I imagine that political historians of the future will consider the organization of colonization on the « mandate » basis as the most important achievement of our own time. Thus far colonial expansion has been one of the ugliest phases of human history, it may still become one of its noblest. The author is unknown to me, but it is impossible to read his work without perceiving that he is a keen observer, a clear and rigorous thinker, and a generous man.

GEORGE SARTON.

Twenty Fourth Critical Bibliography

of the

History and Philosophy of Science and of the History of Civilization

(*to May* 1928).

This Twenty Fourth Bibliography contains about 887 items, some of which have been kindly contributed by the following scholars:

R. C. ARCHIBALD (Providence, R. I.) E. KREMERS (Madison, Wisc.)
T. L. DAVIS (Cambridge, Mass.) J. NEEDHAM (Cambridge)
J. DRECKER (Dorsten, Westphalia) J. STEPHENSON (Edinburgh)
L. GUINET (Brussels) H. WIELEITNER (Munich)
J. K. WRIGHT (New York).

This bibliography includes a complete analysis of volume 9, and the sixth series of addenda and errata to Volume I of my *Introduction to the History of Science* (Baltimore, 1927).

An authors' index will be found at the end. For general information on this undertaking see the Prefaces to the Sixteenth, Eighteenth and Twenty First Bibliographies in *Isis* VII, 171-174, 1925; VIII, 526-528, 1926; IX, 491-92, 1927.

Papers and books sent to the Editor are entered into this bibliography if they are relevant to its purpose. They may be the object of analytical notes or longer reviews, if this seems sufficiently necessary and the services of competent scholars are available. It is obvious that only a small number of publications can be adequately reviewed and that it is not even possible to give a brief description of each and every one. However, our classification is so comprehensive and so minute, that even if we do nothing but give the accurate title of an item and put it in its proper place, we are already rendering a real service to the author, the publisher and the learned public. It should also be noted that there is no relation between the importance of a publication and the length of the note devoted to it.

The ultimate aims of this undertaking are: (1) to establish the History of Science as an independent discipline; (2) to demonstrate inductively the Unity of Knowledge and the Unity of Mankind; (3) to serve as a center of information and rallying ground to the scholars engaged in our studies.

Harvard Library, Room 185. GEORGE SARTON.
Cambridge, Massachusetts. May 31, 1928.

PART I.

FUNDAMENTAL CLASSIFICATION (centurial).

IXth Century B. C.

(Homer). SAMUEL BUTLER's books on the Odyssey ought to have been at least mentioned. BUTLER claimed that the Odyssey was written by a woman. « I know that the classical scholars do not take this theory seriously, but ordinary people gifted with common sense find it most interesting and ingenious. » JOSEPH NEEDHAM. ISIS

Rodd, Sir **Rennell**. HOMER's Ithaca; a vindication of tradition. Map. London, ARNOLD, 1927. ISIS

VIIIth Century B. C.

Smith, George Adam. The book of ISAIAH. New and revised edition. Two vols. London, HODDER and STOUGHTON, 1927. ISIS

VIIth Century B. C.

Thompson, R. Campbell. Assyrian garidu = « beaver ». *Journal Royal Asiatic Society*, 723, 1926. ISIS

This note is at once so short and so important that we reproduce it in extenso : « In my Assyrian Medical Texts (1923; *Isis*, 7, 256), 41,1,29, one of the ingredients of a medicament which consists altogether of eighteen drugs and is called a « Royal Treasure », is « ½ šu S I R (testicle) ša ga -ri -di ». Garidu, which, as far as I know, occurs here only, is philologically the same as the Syr. « beaver », and so we have in this Assyrian recipe of the seventh century B. C. the inclusion of the famous drug *castoreum*, the secretion of the beaver, supposed by the ancients to have come from the testicles of the animal, but actually coming from pouches near the anus. According to HERODOTUS (IV, 109), the European beaver inhabited a large lake in the country of the Budini on the upper Don, and its testicles were used for affections of the womb. PLINY (who also says that the drug came from the testes) says that the best castoreum came from Pontus and Galatia (Nat. Hist., XXXII, 13). It is unnecessary here to say more of its celebrity as a drug among ancient physicians. What is chiefly interesting is that its fame should have spread to Assyria at this date, and that it was evidently an article of commerce brought in by caravans presumably from the region of the Black Sea. »

VIth Century B. C.

(Alcmaeon of Crotona). The following work ought to have been mentioned, J. WACHTLER : *De Alcmaeone Crotoniata* (Leipzig, 1896). More should have been said of his embryological interests, for which see e.g. PLUTARCH's *De placitis*. JOSEPH NEEDHAM. ISIS

Dubs, Homer H. Did CONFUCIUS study the « Book of changes »? *T'oung Pao*, 25, 82-90, 1927. ISIS

(Lao Tzu). LAO chieh LAO (Lao explained by himself). By TS'AI T'ING-KAN. 14-21-164-12 fol. Shanghai, Chung-hua Press, 1922. ISIS

Reviewed by A. C. MOULE, *Journal Royal Asiatic Society*, 152-3, 1926.

Loria, Gino. Il cosidetto « Teorema di Talete ». (Note sulla storia della matematica greca, 2). *Bollettino di Matematica*, 24, p. III-V, 1928. ISIS

Vth Century B. C.

Focke, Friedrich. HERODOT als Historiker. 58 p. (*Tübing. Beiträge zur Altertumswiss.* hrsg. von W. SCHMIDT, J. VOGT, und O. WEINREICH, H. 1). Stuttgart, W. KOHLHAMMER, 1927. ISIS

Reviewed by WILLY THEILER, *Deutsche Literaturzeitung*, 172-5, 1928.

Hippocrates. With an English translation. Volume III., edited by E. T. WITHINGTON. XXVII + 455 p. Loeb Classical Library, London, HEINEMANN, 1927. ISIS

For Vols. 1 and 2, see *Isis* 6, 47-48; 7, 175. Volume 3 contains surgical works : On wounds in the head; In the surgery; Fractures, joints, mochlicon. A fourth volume will complete the Loeb HIPPOCRATES. G. S.

Maspero, Henri. Notes sur la logique de MO-TSEU et de son école. *T'oung Pao*, 25, 1-64, 1927. ISIS

IVth Century B. C. (whole and first half).

Bury, J. B.; Cook, S. A.; Adcock, F. E. (*editors*). Macedon, 401-301 B. C. (*The Cambridge Ancient History*, vol. 6) XXIII + 648 p. Cambridge, University Press, 1927. ISIS

Reviewed by W. S. FERGUSON, *American Historical Review*, 33, 366-369, 1928.

Plato. The Epinomis of PLATO. Translated with introduction and notes by JOHN HARWARD. 146 p. Oxford, Clarendon Press, 1928. ISIS

Wright, Jonathan. Around generation in the Timaeus. *Annals of Medical History*, 9, 347-55, 1927. ISIS

IVth Century B. C. (second half).

(Aristotle). Aristotle selections. Edited by W. D. Ross. XXXII + 348 p. Oxford, University Press, 1927. ISIS

Breloer, Bernhard. Kautaliya-Studien, I. Das Grundeigentum in Indien. 135 p. Bonn, K. SCHROEDER, 1927. ISIS

Lulofs, H. J. ARISTOTELES over eugenese. *Bijdragen tot de geschiedenis der geneeskunde*, 7, 694-701, 1927. ISIS

Mansion, A. La genèse de l'œuvre d'ARISTOTE d'après les travaux récents. *Revue néo-scolastique de philosophie*, 28, 307-44, 423-66, 1927. ISIS

Yuan, Chaucer (Yuan Tcho-ying). La philosophie morale et politique de MENCIUS. (*Études et documents publiés par l'Institut Franco-chinois de Lyon*, t. 2). 324 p. Paris, P. GEUTHNER, 1927 (80 frs.) ISIS

Étude approfondie des idées philosophiques de MENCIUS précédée par une biographie. Un chapitre consacré aux contemporains de MENCIUS nous permet de le placer dans son milieu. L'auteur considère successivement les notions suivantes : ciel ou nature, nature humaine, cœur humain, éducation, destinée, amour de l'humanité, justice, urbanité, prudence. Dans les chapitres suivants, il discute l'homme idéal, l'utilitarisme, les principes politiques, le problème des dénominations ou la théorie dite *tcheng ming*, les relations entre le peuple, le prince et les ministres, le système agraire dit *tsing thyen*. *Tcheng ming* est la théorie confucéenne selon laquelle la propriété des mots a une importance capitale dans la vie intellectuelle, morale et sociale. Le fond de la pensée confucéenne à ce sujet c'est que « connaître la signification des mots aide chaque homme à se bien conduire; une pensée claire et exacte est capable d'engendrer des actions droites, le mal vient en grande partie de l'ignorance et de la confusion des idées. » Le *tsing thyen* est un système de distribution des terres que MENCIUS, s'il n'en fut pas l'inventeur, fut le premier à exposer clairement. Un stade carré de terre est divisé en neuf parties égales et donné par l'état à huit familles; celles ci cultivent séparément à leur profit personnel huit parties; elles cultivent ensemble au profit de l'état la neuvième placée au centre. Cet ouvrage est complété par des bibliographies chinoises et européennes et par un index des mots chinois.

G. S.

IIIrd Century B. C. (whole and first half).

Schnabel, Paul. BEROSSOS und die Babylonisch-Hellenistische Literatur. 275 p. (no index). Leipzig, TEUBNER, 1923. ISIS

Reviewed by T. G. PINCHES, *Journal Royal Asiatic Society*, 546-7, 1926.

IIIrd Century B. C. (second half).

(Asoka). ASOKA texts and glossary. By ALFRED C. WOOLNER. Parts 1,2. (*Punjab University Oriental Publications*). Oxford, University Press, 1924. ISIS

Reviewed by JARL CHARPENTIER, *Journal Royal Asiatic Society*, 135-47, 1926.

(Asoka). Corpus inscriptionum indicarum. Vol. I. Inscriptions of ASOKA. New edition. By EUGEN HULTZSCH. CXXXI + 260 p., 55 pl. For the Government of India, Oxford, Clarendon Press, 1925. ISIS

Reviewed by JARL CHARPENTIER, *Journal Royal Society*, 137-39, 1926.

Czwalina, Arthur. Eine physikalische Präzisionsmessung des ARCHIMEDES. *Archiv für Geschichte der Mathematik*, 10, 464-466, 3 Abb., 1928. ISIS

Measurement of the angular diameter of the sun. ARCHIMEDES said that it is included between 27 and 32.9 minutes, which is true, the real value being 32 minutes. G. S.

Loria, Gino. ARCHIMEDE. La scienza che dominò Roma (I curiosi della natura). 72 p., illustr. Milano, GIACOMO AGNELLI, 1928. ISIS

Beautiful little book written by a master of the subject. G. S.

Loria, Gino. Segmento e settore sferici in ARCHIMEDE. (Note sulla storia della matematica greca, 1). *Bollettino di Matematica*, 24, p. I-II, 1928. ISIS

Tropfke, Johannes. ARCHIMEDES und die Trigonometrie. *Archiv für Geschichte der Mathematik*, 10, 432-463, 13 fig., 1928. ISIS

« Echt wissenschaftliche Astronomie und Trigonometrie ist nicht von Babylon zu HIPPARCH, sondern umgekehrt von Alexandria zum Euphrat geflossen. Erst der griechische Geist hat — wie auf anderen Gebieten der Mathematik — die konkret-praktischen Leistungen Babylons, sein fleissiges und umfangreiches Beobachtungsmaterial, das seit dem Alexanderzuge zugänglich geworden war, zu abstrakter Wissenschaft ausgebaut. Und was HIPPARCH in der Trigonometrie geleistet hat, weist zurück auf das Genie des ARCHIMEDES. »

IInd Century B. C. (whole and first half).

Montgomery, James Alan. A critical and exegetical commentary on the Book of DANIEL. (*International critical commentary*). XXXI + 488 p. New-York, SCRIBNER'S, 1927. ISIS

Ist Century B. C. (whole and first half).

(Lucretius). T. LUCRETI CARI de Rerum Natura libri sex. With notes

and a translation by H. A J. MUNRO. Fourth edition, finally revised. Vol. 2: Explanatory notes. With an introductory essay on the scientific significance of LUCRETIUS, by E. N. DA C. ANDRADE. XXII + 424 p. London, G. BELL, 1928. ISIS

Reviewed by D'ARCY W. THOMPSON, *Nature*, 121, 565-567, 1928.

(Theodosios of Bithynia). Les sphériques de THÉODOSE DE TRIPOLI. Œuvres traduites pour la première fois du grec en français avec une introduction et des notes par PAUL VER EECKE. LIV + 122 p. Bruges, DESCLÉE DE BROUWER, 1927. ISIS

Reviewed by P. J. RICHARD, *Revue gén. des sciences*, 38, 581, 1927.

(Theodosios of Bithynia). THEODOSIUS TRIPOLITES Sphaerica von J. L. HEIBERG (Kopenhagen). (*Abh. d. Ges. d. Wiss. zu Göttingen, phil. hist. Kl.*, Neue Folge Bd. 19, 3). XVI + 199 S. Berlin, Weidmannsche Buchh., 1927. (RM. 16.) ISIS

Im gleichen Jahre 1927 erschien etwas früher als das obige ein Buch : Les sphériques de THÉODOSE DE TRIPOLI, Oeuvres traduites par PAUL VER EECKE, aus dem man die erstaunliche Tatsache erfuhr, dass der Verfasser nach einem neuen kritischen Text, der von J. L. HEIBERG schon fertig gestellt und ihm überlassen worden war, hatte übersetzen können. Als ich nun anfangs dieses Jahres von dem freilich bei dem Alter des Gelehrten begreiflichen, aber doch ungemein beklagenswerten Tode HEIBERGS erfuhr, glaubte ich nicht, dass ich die kritische Ausgabe des THEODOSIOS noch würde erscheinen sehen. Aber siehe da, die Sache war schon weiter gediehen, als ich annehmen konnte, und diese kritische Ausgabe liegt jetzt vor mir. Sie durfte wohl das beste an Text bieten, was gegenwärtig geboten werden kann. HEIBERG zählt zuerst die zahlreichen verglichenen griechischen Codices auf, dann erwähnt er kurz, dass die Sphärik des THEODOSIOS schon im 9. Jahrh. von den Muslimen ins Arabische übersetzt wurde, und dass im 12. Jahrh. zwei lateinische Uebersetzungen aus dem Arabischen vorhanden waren, die heute verschollen sind, während eine andere, anonyme Uebersetzung aus dem Arabischen ins Lateinische in mehreren Codices erhalten blieb. Von zweien wird der Anfang mitgeteilt. HEIBERG hat seinem griechischen Text eine eigene Uebersetzung beigegeben. Die Scholien sind (von S. 166 an) nur griechisch wiedergegeben, und über die dabei benützten Codices ist auch in der Einleitung Rechenschaft gegeben. In den « Corrigenda » (S. XVI) ist (ohne Begründung) verlangt, dass die Bezeichnung « Tripolites » überall zu streichen sei.

Man erfährt aus VER EECKE, dass STRABON Bithynien als des THEODOSIOS Heimatland angegeben habe, und dass der Beiname des Tripolitaners vielleicht davon herrühre, dass THEODOSIOS später in einer der Städte, die Tripolis hiessen, lebte. Er dürfte ein Zeitgenosse des SOSIGENES von Alexandria gewesen sein, dessen sich JULIUS CAESAR zu Kalenderreform bediente. Auch dies erfährt man nur aus VER EECKE, dessen Werk, wie schon aus den Seitenangaben hervorgeht, eine grosse historischbibliographische Einleitung enthält. Wer die Einleitung zum III. Bande der 2. Aufl. der Archimedes-Ausgabe von HEIBERG kennt, wird es sehr bedauern, dass HEIBERG selbst

seine Ausgabe gar so nüchtern in die Welt gehen liess. Vielleicht hat ihn aber sein Ableben gehindert, mehr zu geben. H. W.

Ist Century B. C. (second half).

Billiard, Raymond. L'agriculture dans l'antiquité d'après les Géorgiques de VIRGILE. 540 p., illus. Paris, E. DE BOCCARD, 1928. ISIS

Segre, Mario. Le cognizioni di GIUBA Mauritano sulle Isole Fortunate. *Rivista Geografica Italiana*, 34, 72-80, 1927. ISIS

PLINY gives a detailed account of the Fortunate Isles, or Canaries, on the authority of JUBA II of Mauretania (50 B.C. -23-24 A.D.). By comparison with other fragments in the writings of ancient geographers SEGRE reconstructs JUBA's account of the islands, « geograficamente esattissimo ». J. K. W.

Ist Century (whole and first half).

Drews, Arthur. Le mythe de JÉSUS, traduit de l'allemand par ROBERT STAHL. Paris, PAYOT, 1926. ISIS

For a discussion of the author's views see J. RUSKA in *Isis*, 7, 158-62. G. S.

Holmyard, E. J. An alchemical tract ascribed to MARY THE COPT. The letter of the crown and the nature of the creation by MARY THE COPT, of Egypt. *Arch. di storia d. scienza*, 8, 161-8, 1927. ISIS

La lettre ici traduite, avec commentaires et notes, provient d'un vol. de Mss. alchimiques arabes, de la bibliothèque royale du Caire, où elle voisine avec une version arabe de quelques traités de ZOSIMOS; elle constitue un résumé des principales théories des chimistes d'Alexandrie. L. G.

Robertson, John Mackinnon. JESUS and JUDAS : a textual and historical investigation. London, WATTS, 1928. ISIS

Ist Century (second half).

Feine, Paul. Der Apostel PAULUS. Das Ringen um das geschichtliche Verständnis des PAULUS. VIII + 628 p. Gütersloh, C. BERTELSMANN, 1927. ISIS

Reviewed by ERICH SEEBERG, *Deutsche Literaturzeitung*, 6-10, 1928.

Foakes-Jackson, Frederick John. PETER : prince of apostles; a study in the history and tradition of Christianity. XVII + 320 p., illus. London, HODDER and STOUGHTON, 1927. ISIS

Henderson, Bernard William. Five Roman emperors : VESPASIAN,

TITUS, DOMITIAN, NERVA, TRAJAN, A. D. 69-117. XIV + 357 p. Cambridge, University Press, 1927. ISIS

Reviewed by M. ROSTOVTZEFF, *American Historical Review*, 33, 626-7, 1928.

Nicomachos of Gerasa. Introduction to arithmetic. Translated into English by MARTIN LUTHER D'OOGE. With studies in Greek arithmetic by FRANK EGLESTON ROBBINS and LOUIS CHARLES KARPINSKI. IX + 318 p. New York, MACMILLAN, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 120-123, 1927.

Pieper, Karl. PAULUS. Seine missionarische Persönlichkeit und Wirksamkeit. (*Neutestamentliche Abhandlungen* herausgegeben von M. MEINERTZ, 12. Bd., Heft 1). IV + 266 p. Münster i. W., ASCHENDORFF, 1926. ISIS

Reviewed by P. FEINE, *Deutsche Literaturzeitung*, 657-9, 1928.

(Pliny the Elder). Admirable English translation of the Natural History by PHILEMON HOLLAND (1552-1637), in 1601. JOSEPH NEEDHAM. ISIS

(Plutarch). Admirable English translation of PLUTARCH's Morals by PHILEMON HOLLAND (London, HATFIELD, 1603). JOSEPH NEEDHAM. ISIS

Rendall, Gerald H. The epistle of St. JAMES and Judaic Christianity. 147 p. Cambridge, University Press, 1928. ISIS

Thoma, P. J. The South Indian tradition of the apostle THOMAS. *Royal Asiatic Society*, Centenary Supplement, 213-223, 1924. ISIS

IInd Century (whole and first half).

Drecker, J. Das Planisphaerium des CLAUDIUS PTOLEMAEUS. Uebersetzung. *Isis* 9, 255 — 278, 1927. ISIS

German translation of the text lost in Greek but which has been transmitted to us through Arabic and Latin translations. A critical edition of the XIIth century Latin text was published by J. L. HEIBERG in the Ptolemaei Opera, vol. 2, 227-59. The present translation was made from HEIBERG's text. 14 fig., and a few explanatory notes. G. S.

Larsen, Sofus. Har vi PTOLEMAIOS' geografi i dens oprindelige skikkelse ? *Geografisk Tidsskrift*, 30, 163-202, 1927. (Summary in English). ISIS

Argument that the *Geography*, as it now stands, is a combination erroneously made by copyists as early, perhaps, as the beginning of the 4th century

« of two different works, uniform to a certain extent, but totally different with respect to plan and purpose. » J. K. W.

McCrindle, John Watson. Ancient India as described by PTOLEMY : being a translation of the chapters which describe India and Central and Eastern Asia in the Treatise on Geography written by KLAUDIOS PTOLEMAIOS, the celebrated astronomer. Edited with introduction, commentary, additional map and index by SURENDRANATH MAJUMDAR SASTRI. 431 p. Reprint. London, KEGAN PAUL, 1927. ISIS

Ptolémée. Composition mathématique. Traduite pour la première fois du grec en français sur les manuscrits originaux de la Bibliothèque impériale, par NICOLAS B. HALMA (avec le texte grec), et suivie des notes de JEAN BAPTISTE JOSEPH DELAMBRE. Réimpression facsimile de l'édit. de 1813-16. 2 Vol. LXXVI + 476 + 50 et VIII + 448 + 40 p., J. HERMANN, Paris, 1927. (200 fr.) ISIS

L'édition-traduction de l'Almageste de NICOLAS HALMA était devenue introuvable. L'éditeur J. HERMANN en donne une réimpression phototypique sur beau papier. Bien que PTOLÉMÉE eut été un assez médiocre observateur, les raisons que donnait HALMA en 1813 pour justifier son édition n'ont pas cessé d'être valables. PTOLÉMÉE nous a rendu en grande partie l'œuvre d'HIPPARQUE, tant pour l'astronomie que pour la trigonométrie (*Isis*, 4, 301 ff.), et nombre d'observations, de dates, d'époques astronomiques auxquelles il faut encore avoir recours. On peut discuter sur la valeur astronomique propre de PTOLÉMÉE, son œuvre est là, véritable somme des connaissances acquises à son époque; elle marque une borne sur le chemin de l'histoire de la science.

Evidemment une autre édition que celle de HALMA serait possible actuellement, plus exacte, et basée sur le texte critique publié par J. L. HEIBERG (Syntaxis mathematica, 2 vol. 1898 et 1903); un savant allemand, KARL MANITIUS, l'a fait en sa langue (*Isis*, 1, 146, 295); le fameux Catalogue (édit. HALMA, II, 32-83) a été édité avec commentaires par C. H. F. PETERS et E. B. KNOBEL (*Isis*, 2, 401); on pourrait profiter des remarques de J. L. E. DREYER dans son History of the planetary systems from Thales to Kepler (Cambridge, 1906; voir aussi *Isis*, 4, 131), de celles de TANNERY dans ses Recherches sur l'histoire de l'astronomie ancienne, de DUHEM aux vol. II, III, IV du Système du monde. Mais à son défaut, il faut savoir gré à l'éditeur HERMANN de nous donner une réédition de l'œuvre de l'abbé HALMA.

C'est sur les conseils de DELAMBRE que HALMA entreprit la traduction de PTOLÉMÉE et des commentaires qui y sont attachés. Son œuvre comprend douze volumes : deux pour l'Almageste, deux vol. consacrés à la Chronologie des règnes et à l'hypothèse des planètes, et où sont insérés d'importants mémoires de C. L. IDELER (1766-1846) sur la chronologie des anciens; deux vol. pour les Commentaires de THÉON sur les deux premiers livres de l'Almageste; trois vol. pour les Tables annuelles et leurs commentaires; deux pour les Phénomènes d'ARATOS et l'œuvre d'ISAAC ARGYROS (mathématicien byzantin du XIV^e^ S.); et un pour la Géographie (le premier livre seulement).

L. G.

IInd Century (second half).

Couissin, Pierre. La critique du réalisme des concepts chez SEXTUS EMPIRICUS. *Revue d'histoire de la philosophie*, 1, 377-405, 1927. ISIS

Meyerhof, Max. Les versions syriaques et arabes des écrits galéniques. *Byzantion*, 3, 21 pages, 1927. ISIS

Chiefly based upon the famous treatise of ḤUNAIN IBN ISḤĀQ upon the translation of Galenic writings into Syriac and Arabic, treatise of which the author published an elaborate analysis in *Isis*, 8, 685-724 (see also 9, 501.) G. S.

(Oppianos I.) JOSEPH NEEDHAM of Gonville and Caius College, Cambridge, says rightly that OPPIANOS ought to have been included in my *Introduction*.

Ὀππιανός. Born at Corycos, or Anazarba, both places in Cilicia; composed c. 177-80, a poem on fishes and fishing (*Ἁλιευτικά*) in five books (c. 3500 hexameters). In books 1 and 2, he describes various kinds of fishes and their habits; the following books deal with fishing. This is by far the most important ancient work of its kind. A poem on hunting which accompanies the Halieutica in most editions seems to have been composed by another OPPIANOS whom I call OPPIANOS II, who flourished in the first half of the third century.

Text. First Latin edition, De piscatu libri V, L. LIPPIUS traduxit (64 leaves, Colle, 1478). First Greek edition, Halieutica de natura seu venatione piscium, by MARCUS MUSURUS (140 p., Florence, 1515). First edition of both Greek and Latin texts, De piscibus libri V; de venatione libri IV (168 leaves, Venice 1517); De venatione is in Greek only. Etc.

Greek and Latin edition of both poems with many notes by CONRAD RITTERSHAUSEN (2 vols., Leiden 1597). Elaborate Greek and Latin edition by JOHANN GOTTLOB SCHNEIDER (1750-1822) : De venatione libri IV, de piscatione libri V (Strassburg, 1776; many times reprinted).

F. S. LEHRS : Greek and Latin edition of both poems in Poetae bucolici et didactici (vol. 2, 1-106, 1851).

WILLIAM DIAPER and JOHN JONES : Halieuticks translated into English with an account of OPPIAN's life and a catalogue of his fishes (Oxford, 1722).

Italian translation, Della pesca e della caccaia, by ANTÔN MARIA SALVINI (528 p., Florence 1728). Enlarged edition (Milano, 1864).

French translation of the Halieutica by J. M. LIMES (396 p,. Paris, 1817); of both poems by E. J. BOURQUIN (245 p., Coulommiers, 1877).

Criticism. J. G. SCHNEIDER : Proben von der Fischkunde der Alten *Mag. Naturkunde* (Leipzig 1783, 62-98). T. H. MARTIN : Études sur la vie et les œuvres d'OPPIAN de Cilicie (Paris, 1863). THOMAS WESTWOOD and THOMAS SATCHELL : Bibliotheca piscatoria (London, 1883). MAURICE CROISET : Histoire de la littérature grecque (vol. 5, 621-622, 1899). WILHELM BAUMANN : Quaestiones de animalium historia Aelianae et Oppianeae. (77 p., Marburg, 1912). GEORG BÜRNER : OPPIAN und sein Lehrgedicht vom Fischfang (Progr., 48 p., Bamberg, 1912). WILLIAM RADCLIFFE : Fishing from the earliest times (New York, 1921; *Isis*, 4, 568). E. W. GUDGER : Bibliography of fishes (vol. 3, 295, New York, 1923; *Isis*, 6, 456). ISIS

Sudhoff, Karl. Anatomietexte in den lateinischen Galen-Handschriften des XIII. und XIV. Jahrhunderts und in den Frühdrucken. *Janus* 31, 294-303, 4 fig., 1927. ISIS

Walsh, Joseph. GALEN visits the Dead Sea and the copper mines of Cyprus (166 A.D.) *Bulletin of the Geographical Society of Philadelphia*, 25, 93-110, 5 illus., 1 plan, July 1927. ISIS

GALEN visited the Dead Sea « for the purpose of procuring asphalt for medical uses. » He also gives interesting notes on the chemical properties of certain ores in the copper mines of Cyprus. J. K. W.

IIIrd Century (whole and first half).

(Oppianos II). Author of a poem on hunting, *Κυνηγετικά*, in four books (c. 2100 hexameters). He was apparently born in Apamea or Pella in Syria, and flourished under CARACALLA (emperor from 211 to 217). He is said to have written the Cynegetica in his youth and to have dedicated them to CARACALLA. The style of this poem is inferior to that of the Halieutika. For all of these reasons, we are obliged to conclude that these poems were written not by one OPPIANOS, but by two homonyms. The Cynegetica are divided as follows : Book I, Qualities of the huntsman, dogs, horses; II, Cattle; III. Wild beasts; IV. Various kinds of hunting.

A poem on fowling (with birdlime), *Ἰξευτικά*, is also ascribed to one OPPIANOS. This poem is only known through a prose paraphrase by one EUTECHNIOS; it is thus impossible to decide its authorship.

For bibliography, see my note on OPPIANOS I (second half of second century). PIERRE BOUDREAUX : La chasse, édition critique (Bibliothèque de l'École des hautes études; 154 p. Paris, 1908). ISIS

IIIrd Century (second half).

Bortolotti, Ettore. Le opere di DIOFANTO, tradotte da PAUL VER EECKE. *Periodico di Matematiche*, 7, 42-50, 1927. ISIS

Jackson, A. V. Williams. The « second evocation » in the Manichaeen system of cosmogony. *Royal Asiatic Society*, Centenary Supplement, 137-155, 1924. ISIS

(Lactantius). L. CAECILIUS (or CAELIUS) FIRMIANUS, called LACTANTIUS. Latin Father of the Church, the « Christian Cicero. » Born c. 230-250; died a very old man, probably at Treves. The *Introduction* ought to have contained a note devoted to him. In his De opificio Dei, I think, it looks as if he had opened eggs during incubation for he refers to it saying that the head is the biggest part.
JOSEPH NEEDHAM. ISIS

(Pappos of Alexandria). According to the VIth book (unpublished) of his Commentary on the Almagest, PAPPOS was still living on October 18, 320. Private communication kindly made by the Abbé ROME of Louvain, about whom see *Isis*, 9, 499. His argument, based upon the consideration of eclipses, has been communicated by him to the Société Scientifique de Bruxelles in April 1927 (see below). G. S.
ISIS

Waldschmidt, Ernst; Lentz, Wolfgang. Die Stellung JESU in Manichäismus. *Abhandlungen d. Preuss. Akademie d. Wiss.*, Jahrgang 1926. Phil.-hist. Kl. Nr. 4. 131 S. Berlin, W. DE GRUYTER, 1926. ISIS
Reviewed by ANTON BAUMSTARK, *Deutsche Literaturzeitung*, 319-326, 1928.

Zacharias, M. Bemerkungen zu der Mitteilung « Ein falscher Satz des PAPPOS » von A. CZWALINA. (Diese Mitteilungen 26, 1927, 233-34). *Mitt. zur Geschichte der Medizin*, 27, 1-2, 1928. ISIS

IVth Century (whole and first half).

Bell, H. Idris. Jews and Christians in Egypt. The Jewish troubles in Alexandria and the Athanasian controversy, illustrated by texts from Greek papyri in the British Museum, with three Coptic texts edited by W. E. CRUM. 140 p. London, British Museum, 1924. ISIS
Reviewed by HENRI GRÉGOIRE, *Byzantion* I, 638-647, 1924.

La Vallée Poussin, L. de. L'Abhidharmakosa de VASUBANDHU. Traduit et annoté. 225 p., XI + 30 p. Quatrième chapitre, 1924.

Cinquième, ..., neuvième chapitres, 1925. Paris, GEUTHNER, 1925. ISIS

Rome, A. Sur la date de PAPPUS d'Alexandrie. *Annales de la société scientifique de Bruxelles*, série A (math.), 46-8, 1927. ISIS

Le Commentaire de PAPPUS sur l'Almageste date des environs de 320. L. G.

IVth Century (second half).

(Gregory of Nyssa). Greek father of the Church, born c. 330, died c. 400. The *Introduction* ought to have included a note on GREGORY OF NYSSA. I thought when I read his De opificio hominis in MIGNE's Patrologia that he gave a perfect account of DRIESCH's « dynamic teleology » in patristic language. JOSEPH NEEDHAM. ISIS

Mayer, Franz Claudius. Der Oribasius-Codex des Ungarischen Nationalmuseums. *Orvosi Hetilap* 1925. Nr. 43. ISIS

Reviewed by F. VON GYÖRY in *Mitteilungen zur Geschichte der Medizin*, 27, 55, 1928.

Randle, H. N. Fragments from DINNAGA. XII + 93 p. (Prize Publication Fund, 9). London, *Royal Asiatic Society*, 1926. ISIS

Valdenberg, Vlad. Discours politiques de THÉMISTIUS dans leur rapport avec l'antiquité. Traduit du russe par H. GRÉGOIRE. *Byzantion*, I, 557-580, 1924. ISIS

Zellinger, Johannes. Studien zu SEVERIAN von Gabala. (*Münsterische Beitr. zur Theologie*, H. 8). VIII + 182 p. Münster, ASCHENDORFF, 1926. ISIS

Reviewed by FRANZ DREXL, *Deutsche Literaturzeitung*, 612-16, 1928.

Vth Century (whole and first half).

Fuchs, Harald. AUGUSTIN und der antike Friedensgedanke; Untersuchungen zum neunzehnten Buch der Civitas Dei. (*Neue Philol. Unters.* hrsg. von WERNER JAEGER, H. 3). 258 p. Berlin, WEIDMANN, 1926. ISIS

Reviewed by R. REITZENSTEIN, *Deutsche Literaturzeitung*, 2203-04, 1927.

Law, Bimala Charan. The life and work of BUDDHAGHOSA. XII + 183 p. (*Calcutta Oriental Series*). Calcutta, THACKER and SPINK, 1923. ISIS

Reviewed by L. FINOT, *Bulletin de l'Ecole française d'Extrême Orient*, 25, 485-89, 1925.

Weller, Friedrich. Yojana und li bei FA HSIEN. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 74, 225-237, 1920. ISIS

Vth Century (second half).

Lowe, James H. Tutorial preparation for Mishnah and Gemoro or Talmud without a master. A specimen of easy Talmudic dialectics. 66 p. (*Tutorial preparation for Rabbinics*, no. 1) London, Hebrew Compendium Publishing Co., 1926.

Moyse, Gabrielle. Le Talmud de Babylone. Ses lois morales et sociales. XII + 137 p. Paris, E. LEROUX, 1926. ISIS

Reviewed by MOSES JUNG, *Jewish Quarterly Review*, 18, 439-40, 1928.

VIIth Century (whole and first half).

Mookerji, Radhakumud. HARSHA. (*Calcutta University Readership Lectures*, 1925). 203 p., 2 pl., 1 map. (Rulers of India). Oxford, University Press, 1926. ISIS

Reviewed by PAUL PELLIOT, *T'oung Pao*, 25, 169-174, 1927.

VIIth Century (second half).

Krusch, Bruno. FREDEGARIUS SCHOLASTICUS — OUDARIUS ? *Nachr. d. Ges. d. Wiss. zu Göttingen. Phil.-hist. Kl.* S. 237-263, 1 Taf., 1926. ISIS

Moreau, Edouard de (S. J.) SAINT AMAND, apôtre de la Belgique et du nord de la France. XII + 367 p. Louvain, Edition du Museum Lessianum, 1927. ISIS

Reviewed by C. W. D., *American Historical Review*, 33, 428, 1928.

VIIIth Century (whole and first half).

(Virgilius of Salzburg). *Introduction*, volume I, 516. See LYNN THORNDIKE in *Isis*, 6, 369. ISIS

VIIIth Century (second half).

Cheikho, Louis (-1927). La version arabe de Kalîlah et Dimnah d'après le plus ancien manuscrit arabe daté. 2de édition revue et corrigée. 76 + 260 p. Beyrouth, Imprimerie Catholique, 1923. ISIS

In Volume I of my *Introduction* I forgot to mention (on p. 540) Father CHEIKHO's critical edition of the Kalîla wa-Dimna. This edition is based upon a Ms. dated 1339, which the author found in a Greek Melchite monastery, Dair al-shîr near Beirut. Says he « En parcourant cette version nous

fûmes frappé de sa rédaction sobre, de son style archaïque, et parfois raboteux, qui nous rappelait si bien le style caractérisque d'IBN MOQAFFA' connu d'ailleurs. En la comparant aux plus anciennes recensions de l'ouvrage, celle-ci nous semblait un écho plus fidèle de la rédaction primitive. Aucune autre recension ne se rapproche autant du Pantchatantra et des deux versions syriaques, l'une antérieure à la version arabe, l'autre postérieure faite sur l'arabe au X^e^ siècle et éditée par W. WRIGHT. C'est ce qui nous a décidé à l'offrir aux Orientalistes, et à la reproduire telle quelle avec ses incorrections et ses passages obscurs, dans l'espoir qu'elle pourra leur servir de base et de point de comparaison avec les Manuscrits si nombreux et si différents que l'on connait. » This edition has been apparently prepared with considerable care, but unfortunately the critical notes (50 p.) are printed all together after the text, than which nothing could be less convenient. G. S.

Furlani, Giuseppe. Di una presunta versione araba di alcuni scritti di PORFIRIO e di ARISTOTELE. *Rendic. dell'Accad. dei Lincei, sc. mor.*, 205-213, 1926. ISIS

Ms. 338 de la Bibliothèque de l'Université de Beyrouth; du XIX^e^ S.; version arabe de l'Introduction de PORPHYRE, des Catégories d'ARISTOTE, avec le commentaire de PORPHYRE, du De Interpretatione et des Analytiques du même philosophe. Le traducteur serait MUHAMMAD IBN ABD ALLAH AL-MUQAFFA. L. G.

I assume the translator meant by the author is 'ABDALLÂH IBN AL-MUQAFFÂ', see my *Introduction*, volume I, 540. G. S.

IXth Century (whole and first half).

Achmetis. Oneirocriticon. Edidit F. DREXL. XVI + 270 p. Leipzig, TEUBNER, 1925. ISIS

Reviewed by P. GRAINDOR, *Byzantion*, vol. 2, 487, 1925. « L'Oneirocriticon d'ACHMET n'avait plus été republié depuis l'édition de RIGAULT, parue à Paris, en 1603. .....La personnalité d'ACHMET reste énigmatique. M. DREXL renonce à l'identifier, comme il l'avait proposé dans sa dissertation (Achmets Traumbuch, Munich, 1909) avec l'interprète des songes du calife MAMOUN (813-833). Ce qui est sûr, c'est que l'Oneirocriticon a été écrit entre 813, date initiale du règne de MAMOUN dont il est question dans cet ouvrage, et 1176, année où LEO TUSCUS le traduisit en latin. De plus, il paraît certain qu'en dépit de son nom, ACHMET était un grec chrétien, qui cite plus d'une fois les évangiles et utilise les sources arabes. Se servit-il aussi d'ARTÉMIDORE et d'autres sources grecques originales ou traduites en arabe, c'est une question encore à élucider. Grâce à M. DREXL, nous possédons maintenant un texte d'ACHMET scientifiquement établi. Trois indices (nominum, rerum et verborum potiorum, grammaticus) en facilitent l'utilisation. Dans l'index verborum, on ne relève pas moins de 139 mots qui ne figurent pas dans les dictionnaires d'ESTIENNE, de DU CANGE, de SOPHOCLÈS, de KOUMANOUDIS et de VAN HERWERDEN. »

('Alî ibn Îsâ). 'ALÎ IBN 'ÎSÂ, das Astrolab und sein Gebrauch. Uebersetzt von CARL SCHOY. *Isis* 9, 239-254, 1927. ISIS

German translation of the treatise on the astrolabe of which the Arab text was edited by Father CHEIKHO in *Al-mashriq*, 1913. See SARTON's *Introduction*, vol. I, 566, and *Isis* 5, 211. Short prefatory note by J. DRECKER. G. S.

Dvornik, Frantisek. Les Slaves, Byzance et Rome au IXe siècle. (Travaux publiés par l'Inst. d'études slaves, IV.) VI + 360 p. Paris, CHAMPION, 1926. ISIS

Reviewed by PERCY ERNST SCHRAMM, *Deutsche Literaturzeitung*, 139-143, 1928.

Farmer, Henry George. « The horn of ALEXANDER THE GREAT ». *Journal Royal Asiatic Society*, 500-503, 1926. ISIS

The earliest reference to an organ in Arabic literature, i.e. to the so-called « horn of ALEXANDER », is found in the Kitâb al-siyâsa which YÛḤANNÂ IBN BAṬRÎQ is supposed to have translated from the Greek. The relevant text is here edited, translated, illustrated and discussed. G. S.

Gandz, Solomon. On the origin of the term « root ». Second article. *American Mathematical Monthly*, 35, 67-75, 1928. ISIS

« In a recent number of this *Monthly*, the writer suggested that the term 'root' goes back to the Arabic *jadhr*, a word originally meaning a concrete number designating a geometric magnitude, as contrasted with an abstract number. He further referred to some passages of the algebra of AL-KHOWÂRISMÎ which clearly defined *jadhr* as the side of a square multiplied into a square unit, and proposed that *jadhr* should not be translated as 'root' but rather as 'basis' or 'foundation'. It is the purpose of this paper to inquire further into the same problem, to examine fully the algebra of AL-KHOWÂRISMÎ, and to see how he understands this term *jadhr* in those numerous passages of his book in which the above definition cannot be applied. In connection with this special question the writer will attempt, in a short and necessarily incomplete sketch, to comment on the origin of the Arabic terminology of algebra in general. »

Guillaume, Alfred. A debate between Christian and Moslem doctors. *Royal Asiatic Society*, Centenary Supplement, 233-244, 1924. ISIS

Mujâdala (disputation) between THEODORE ABÛ QURRA, bishop of Harran (long known to patrologists as ABUCARA), who lived from c. 740 to 820, and a Muslim doctor, initiated by the Caliph AL-MA'MÛN. G. S.

Mor, Carlo Guido. Lex romana canonice compta. Testo di leggi romano-canoniche del sec. IX pubblicato sul ms. parigino Bibl. Nat. 12448. Con introduzione e due tavole delle fonti. (Pubblicazioni della R. Università di Pavia, Facoltà di Giurisprudenza, tomo 31) 212 p. Pavia, Tipografia Cooperativa, 1927. ISIS

Reviewed by FEDOR SCHNEIDER, *Deutsche Literaturzeitung*, 2618-2619, 1927.

Preisendanz, Karl. Die Entdeckung der Handschrift WALAHFRID STRABOS. *Forschungen und Fortschritte*, 3, 154-155, 1927. ISIS

IXth Century (second half).

Finkel, Joshua. A risâla of AL-JÂḤIẒ. *Journal of the American Oriental Society*, 47, 311-334, 1928. ISIS

This is the English translation of AL-JÂḤIẒs' Reply to the Christians which I analysed in *Isis* when the Arabic text was published by the same author (Cairo, 1926; *Isis*, 10,494). The translation (p. 322-34) is preceeded by a biographical introduction and a brief commentary (12 p.) G. S.

(Ibn Qutaiba). 'UYÛN AL-AKHBÂR, Dâr al-kutub al-Miṣrîya. Vol. I, 18-344 p. Cairo, 1343 (1925).

Reviewed by F. KRENKOW, *Journal Royal Asiatic Society*, 542-4, 1926.

Monnier, Henri. Les Novelles de LÉON LE SAGE. Introduction. Droit public. Droit pénal. Les personnes. Les biens. (Fascicule 17 de la Bibliothèque des Universités du Midi). VII + 226 p. Bordeaux, FERET et fils, 1923. ISIS

Reviewed by PAUL COLLINET, *Byzantion*, I, 617-618, 1924.

Xth Century (whole and first half).

Krenkow, F. The beginnings of Arabic lexicography till the time of AL-JAUHARI, with special reference to the work of IBN DURAID. *Royal Asiatic Society*, Centenary Supplement, 255-270, 1924. ISIS

Stapleton, H. E., Azo, R. F. and **M. Hidayat Ḥusain.** Chemistry in Iraq and Persia in the tenth Century A.D. *Memoirs of the Asiatic Society of Bengal*, 8, 317-418, 1927. ISIS

Étude critique et traduction du Madkhal at-ta'lîmî (Introduction pratique), le premier d'une série de douze traités d'alchimie de AL-RÂZÎ (*Isis*, 5, 47, N° 152). (Ce traité est non seulement traduit, mais le texte arabe en est publié en appendice); des deux chapitres d'introduction du Kitab al-Asrâr (le Livre des secrets) du même auteur (*Isis*, 5, 47, N° 164); du 9e chap. de la 2e partie de Mafâtiḥ al-'ulûm (les Clefs de la science) de AL-KHWÂRIZMÎ, dont la source est probablement le Madkhal et où se trouvent des extraits des autres traités alchimiques de RÂZÎ; d'extraits de JÂBIR, lequel est probablement la source originale d'AL-RÂZÎ. (*Isis*, 11, 128-34). L. G.

Yeldham, Florence A. The alleged early English version of EUCLID. *Isis* 9, 234-238, 1927. ISIS

Disproving the story that EUCLID's Elements were already introduced into England during the rule of the Saxon king AETHELSTAN (c. 894-940). G. S.

Xth Century (second half).

(Ibn al-Qûṭîya). Historia de la Conquista de España de Abenelcotía el Cordobés. Colleccion de obras arábigas de historia e geografia, que publica la Real Academia de la Historia. XXXII + 186 + 232 p. Madrid, 1868-1926. ISIS

The text of the Ta'rîkh al-Andalus was edited from the unique Paris Ms. by PASCUAL DE GAYANGOS Y ARCE (1809-97) and printed in 1868 but not issued. Don JULIÁN RIBERA Y TARRAGO has now added a translation, introduction and textual emendations. G. S.

Strzygowski, Josef. Der Norden in der bildenden Kunst Westeuropas. Heidnisches und Christliches um das Jahr 1000. Unter Mitwirkung von BRUNO BREHM, ERNST KLEBEL, JOHANNES SCHWIEGER, FRIEDR. WIMMER. Quart mit über 300 Textseiten und 356 Tafeln und Abbildungen, Wien, Krystall Verlag, 1926. ISIS

XIth Century (whole and first half).

Asín Palacios, Miguel. El Cordobés ABENHAZAM, primer historiador de las ideas religiosas. Discursos leídos ante la Real Academia de la Historia en la recepción pública del Señor D. MIGUEL ASÍN PALACIOS, el día 18 de Mayo de 1924. p. 5 -58. Madrid 1924. ISIS

This inaugural discourse contains a short biography of IBN HAZM and an analysis of his history of religions. Don MIGUEL explains why the interest in the history of religions developed so late in Christian Europe and why it appeared earlier in Islam. Don MIGUEL had the great pleasure of being welcomed into the Academy by his old master and friend D. JULIAN RIBERA Y TARRAGO. G. S.

(Ibn Ḥazm). Los caracteres y la conducta. Tratado de moral práctica por ABENHAZAM de Cordóba. Traducción española por MIGUEL ASÍN. (Junta para ampliación de estudios e investigaciones cientificas, Centro de Estudios Historicos.) XXIII + 137 p. Madrid, 1916. ISIS

Spanish translation of the Kitâb al-akhlâq wal-siyar fî mudâwâ-l-nufûs (or Qualities and conduct or the medicine of souls) with a brief introduction (21 p.) and indices of subject and proper names. G. S.

Pinczower, Ephraim. Ueber den Kanon des IBN SINA. Festschrift zum 70. Geburtstag von MORITZ SCHAEFER. Philo-Verlag, 159-172, Berlin, 1927. ISIS

Reviewed by M. MEYERHOF in *Mitteilungen zur Geschichte der Medizin*, 26, 325, 1927.

XIth Century (second half)

(Hermann the Lame). To the editions of his works should be added, the following. BERN. PEZ : Thesaurus anecdotorum novissimus (6 vols., 1721-29). MIGNE : Patrologia latina (vol. 143). J. DRECKER.
ISIS

Meyerhof, Max. Eine unbekannte arabische Augenheilkunde des 11. Jahrhunderts n. Chr. *Archiv für Geschichte der Medizin*, 20, 63-79, 1928. ISIS

Important ophthalmological treatise ascribed to 'ALÎ IBN IBRÂHÎM IBN BAKHTYASHÛ' of Kafr Ṭâb (in Syria, between Aleppo and Ma'arra), who flourished c. 1067. This particular member of the famous BAKHTYASHÛ' family (a family of Nestorian physicians attached for centuries to the 'Abbâsid caliphs, see my *Introduction*, I, 537) was hitherto unknown. He practiced at least for a time in Egypt, and was probably a Muslim. His treatise, entitled Kitâb tashrîḥ al-'ain (Anatomy of the eye), is here analyzed on the basis of two Mss. of the middle of the twelfth century. G. S.

Psellos, Michel. Chronographie ou histoire d'un siècle de Byzance (976-1077). Texte établi et traduit par EMILE RENAULD. LXXXVIII + 308 p. Paris, Les Belles Lettres, 1926. ISIS

Reviewed by HENRI GRÉGOIRE, *Byzantion*, 2, 550-567, 1925.

(Rashi). RASHI on the Pentateuch. Genesis. Translated and annotated by JAMES H. LOWE. (No. 2 of Lowe's Series of « Tutorial Preparations for Rabbinics »). 64 p. London, Hebrew Compendium Publishing Co., 1928. ISIS

Yeldham, Florence A. Fraction tables of HERMANNUS CONTRACTUS. *Speculum*, 3, 240-245, 1928. ISIS

« The Cathedral Library at Durham possesses an unnoticed early twelfth century manuscript of English provenance of a work, hitherto unrecorded, of HERMANNUS CONTRACTUS. It contains the multiples, products, and quotients of the duodecimal fractions. » In this Ms. and also in another (St. John's, Oxford) these tables are said to be the work of one HERMANNUS. The ascription to HERMANN THE LAME is plausible but not certain. G. S.

XIIth Century (whole and first half).

Banerji, Haran Chandra. Colebrooke's translation of the Lilavati. 2nd edition. VII + 201 p. Sanskrit text, 116 p., printed as appendix. Calcutta, Book Company, 1927. ISIS

Bernard of Clairvaux. Select treatises S. BERNARD of Clairveaux : De diligendo Deo; De gradibus humilitatis et superbiae, edited by

W. W. WILLIAMS and B. R. V. MILLS. XXIII + 169 p. Cambridge, University Press, 1926. ISIS

Reviewed in *Speculum*, 2, 494-96, 1927.

Duthuit, Georges. Byzance et l'art du XIIe siècle. (La culture moderne, I). 116 p., 16 pl. Paris, STOCK, 1926. ISIS

Reviewed by M.S., *Byzantion*, 2, 540-1, 1925.

Jeanselme, E. et Oeconomos, L. La satire contre les Higoumènes. Poème attribué à THÉODORE PRODROME. Essai de traduction française. *Byzantion*, 1, 317-339, 1924. ISIS

Krenkow, F. IBN ASH-SHAJARI. *Journal Royal Asiatic Society*, 96-100, 1926. ISIS

Famous philologist who flourished in Baghdâd and died in 1148. G. S.

Loomis, Roger Sherman. GEOFFREY OF MONMOUTH and Arthurian origins. *Speculum* 3, 16-33, 1928. ISIS

Soothill, W. E. The two oldest maps of China extant. *Geographical Journal*, 49, 532-555, 2 plates, 1927. ISIS

The two maps in question were engraved on stone in 1137; they are probably copies of « the oldest and most accurate maps of which we have any knowledge ». Professor SOOTHILL suggests that one of the maps may have been based on CHIA TAN's map of A.D. 801 (see SARTON, *Introduction*, I, 536), and that the other « was made and used entirely for pedagogical purposes, its object being solely to enable students preparing for examination to visualize and understand » the ancient geography of China. J. K. W.

XIIth Century (second half).

Beck, Jean. Les chansonniers des troubadours et des trouvères publiés en facsimile et édités, texte et musique. Vols. I and II. XXXIII + 282 p.; LXXVI + 343 p. Philadelphia, University of Pennsylvania Press, 1927. ISIS

Reviewed by C. H. GRANDGENT, *Speculum*, 3, 255-258, 1928. « The two majestic, handsome volumes now before us are but the beginning of Professor BECK's grandiose plan. In his *Corpus Cantilenarum Medii Aevi* he intends to make accessible every surviving thing non-liturgical that was sung in western Europe in the twelfth and thirteenth centuries. Something less than 20,000 musical compositions are known to exist; the fundamental principles were established before the end of the twelfth century, and a rapid development ensued in the thirteenth. For text, there are extant some 5,000 poems of trouvères and troubadours, contained in about 100 manuscripts of the thirteenth and fourteenth centuries. A comparison of these songbooks is essential for the tracing of literary and melodic relations; and such comparison is now to be made possible for all. We owe a debt of gratitude

to Mrs. MARY LOUISE CURTIS BOK, founder of the Curtis Institute of Music, whose generosity made the great enterprise possible. »

Cohen, (Rev.) A. The teachings of MAIMONIDES. XIV + 339 p. London, ROUTLEDGE, 1927. ISIS

A summary of MAIMONIDES's views in systematic order. As this summary is largely made up of quotations (in English translation), this book may be considered a Maimonidian anthology. It is divided as follows : God; constitution of the universe; attributes of God; worship of God; prophecy; Torah; divine providence; reward and punishment; eschatology; psychology; ethics; obiter dicta; notes; index. G. S.

Ferrand, Gabriel. Le Tuḥfat al-albâb de ABÛ ḤÂMID AL-ANDALUSÎ AL-GHARNÂṬÎ, édité d'après les Mss. 2167, 2168, 2170 de la Bibliothèque nationale et le Ms. d'Alger. *Journal Asiatique*, vol. 207, 1-148, 193-304, 1925. ISIS

This is the first critical edition of this important geographical text; which ABÛ ḤÂMID MUḤAMMAD AL-MÂZINÎ (Granada, 1080-81; Damascus, 1169-70) wrote at Mosul in 1162. It is not a complete edition, for the editor has not been able to avail himself of all the Mss., and the text has many lacunas, witness the numerous passages quoted by QAZWÎNÎ which could not be found in any of the Mss. used by the author. Yet it is a very elaborate and careful edition, to which the editor has added QAZWÎNÎ's fragments above-mentioned. The Arabic text is followed by an analysis with partial translation, notes and indices. Two series of complementary notes, additions and corrections (p. 277-91) make the study of the text somewhat awkward. Eight plates reproduce curious illustrations, e. g. fishes, from the Mss. While one must be grateful to the author for the pains he has taken, it seems a pity that he did not make the additional effort which would have completed his job, instead of leaving it half-done; for example, that he did not use the Copenhagen Ms. supposed to be the best. G. S.

Grundmann, Herbert. Studien über JOACHIM VON FLORIS. (*Beiträge zur Kulturgeschichte des Mittelalters und der Renaissance* hrsg. von WALTER GOETZ, Bd. 32) VI + 212 p. Leipzig, TEUBNER, 1927. ISIS

Reviewed by PAUL PIUR, *Deutsche Literaturzeitung*, 2349-2352, 1927.

Hempel, Heinrich. Nibelungenstudien. I : Nibelungenlied, Thidriks-saga und Balladen. (*German. Biblioth.* hrsg. von W. STREITBERG, Abt. II, Nr. 22). V + 274 p. Heidelberg, C. WINTER, 1926. ISIS

Reviewed by E. GIERACH, *Deutsche Literaturzeitung*, 2098-2104, 1927.

Lacombe, Georges. La vie et les œuvres de PRÉVOSTIN (mort vers 1210). X + 251 p. Kain (Belgique), Le Saulchoir, 1927. ISIS

Reviewed by PIERRE BATIFFOL, *Journal des Savants*, 85-87, 1928.

Marinesco, Constantin. Le prêtre Jean. Son pays. Explication de son nom. 40 p. *Bulletin de la section historique de l'Académie roumaine*, Bucarest, 1923. ISIS

Reviewed by CHARLES PERGAMENI, *Byzantion*, I, 606-610, 1924. « Partisan convaincu de la thèse éthiopienne, qu'avait déjà entrevue YULE, dans l'édition qu'il nous donna du voyage de MARCO POLO; je suis heureux de signaler au lecteur la savante monographie de M. MARINESCO qui me paraît avoir démontré, de la manière la plus décisive le bien fondé de cette opinion. »

(Salisbury, John of). The statesman's book of JOHN OF SALISBURY. Being the fourth, fifth and sixth books, and selections from the seventh and eighth books, of the Policraticus. Translated into English, with an introduction by JOHN DICKINSON. XC + 410 p. London, KNOPF, 1927. ISIS

Schröfl, Aloys. Der Urdichter des Liedes von der Nibelunge Nôt und die Lösung der Nibelungenfrage. 352 p. München, J. B. HOHENESTER, 1927. ISIS

Reviewed by ANDREAS HEUSLER, *Deutsche Literaturzeitung*, 1954-1955, 1927.

Sudhoff, Karl. Salerno, Montpellier und Paris um 1200. Ein Handschriftenfund. *Archiv für Geschichte der Medizin*, 20, 51-62, 1928. ISIS

Sudhoff, Karl. Die vierte Salernitaner Anatomie. *Archiv für Geschichte der Medizin*, 20, 33-50, 1928. ISIS

Text of the « fourth Salernitan anatomy », beginning « Morbo ocii meo languente animo, ne ipsius torpor in deterius molesceret, poculum conpetentis medicaminis propinaui. »; ending « Funes sunt uenae in brachiis intricatae, splenetica inter medicum et auricularem, ualens spleneticis incisa, reliquae ad membra cetera fouenda diffunduntur, » from a fourteenth century Ms. in the library of count SCHÖNBORN in Pommersfelden. It was composed by a younger contemporary of MATTHAEUS PLATEARIUS, who, the editor suggests, might be URSO OF CALABRIA. G. S.

XIIIth Century (whole and first half).

Asín y Palacios, Miguel. El mistico murciano ABENARABI. *Boletín de la Real Academia de la Historia*, Madrid, 1925-1926. ISIS

Three parts of this important memoir have appeared : I (tomo 87, 96-173, 1925) Introduction containing the biography of IBN 'ARABÎ (born at Murcia, 1165 (not 1164); died at Damascus 1240) the greatest representative of the Illuministic school founded by IBN MASARRA of Cordova (q. v., ASÍN's study 1914, *Isis* XI, 168). This elaborate biography is derived from IBN 'ARABÎ's own writings, especially from the Futûḥât. Two double plates represent his tomb in Damascus. — II (110 p., 1926). This is a continuation of the

autobiography derived from one of his unpublished writings, the Risâlat al-quds (Letter on sanctity), Escorial Ms. 741, itself a summary of another work of his entitled Al-durrat al-fâkhir (The precious pearl). This Risâlat contains (1) a brief account of spiritual life in the East; (2) a scrutiny of his own religious feelings, (3) fifty five biographical sketches of the men who influenced his thought. This third section is the largest and most important; it fills 80 pages of ASÍN's second memoir. All of the men with whom IBN 'ARABÎ dealt were westerners. He was anxious to oppose the examples of virtue and perfection which his masters and brethren had given him during the forty years he had spent in the West, to the corruption and decadence which he was now witnessing in the East. — III (57 p., 1926). Exposition of IBN 'ARABÎ's doctrine : syncretism, esoterism, mystical scepticism. This is concluded by very suggestive comparisons of IBN'ARABÎ with DESCARTES and NEWMAN. G. S.

Haskins, Charles Homer. Latin literature under FREDERICK II. *Speculum* 3, 129-151, 1928. ISIS

(Ibn Ṭumlûs). Introducción al arte de la lógica por ABENTOMLÚS de Alcira. Texto árabe y traducción española por MIGUEL ASÍN. Fasciculo I. Categorías. Interpretación. (*Junta para ampliación de estudios e investigaciones científicas, Centro de Estudios Históricos*). XXX + 154 + 110 p. Madrid, 1916. ISIS

ABÛ-L-ḤAJJÂJ YÛSUF IBN MUḤAMMAD IBN ṬUMLÛS was born in Alcira, and died there in 1223-24. He wrote a treatise on logic of which the first part (Categories, Interpretation) is here edited and translated into Spanish. Don MIGUEL has added a brief introduction containing the little that is known about this Hispano-Muslim philosopher. The text is edited from the Escorial Ms. 649. It is difficult to judge the logical knowledge of IBN ṬUMLÛS and his originality until the whole work is published. It is probable that his originality was not considerable. G. S.

Lamb, Harold. GENGHIS KHAN, emperor of all men. Illustrated. London, THORNTON BUTTERWORTH, 1928. ISIS

Mehemmed-Ali-Aïnî. La quintessence de la philosophie de IBN-I-ARABÎ. Traduit par AHMED RÉCHID. 105 p. Paris, PAUL GEUTHNER, 1926. ISIS

Reviewed by JOSEPH SCHACHT, *Deutsche Literaturzeitung*, 2342-2343, 1927.

Paetow, Louis J. The crusading ardor of JOHN OF GARLAND. The crusades and other historical essays presented to DANA C. MUNRO by his former students, p. 207-222, New York, CROFTS, 1928. ISIS

Thorndike, Lynn. Some thirteenth-century classics. *Speculum*, 2, 374-383, October 1927. ISIS

XIIIth Century (second half).

(Aquinas, St. Thomas). God and his works : being selections from Part I. of the « Summa Theologica ». Arranged, with an introduction, by A. G. HERBERT. (Texts for students, no. 40). XXIV + 104 p. London, S. P. C. K., 1928. ISIS

Davis, Tenney L. BACON's De mirabili potestate (Query 6). *Isis*, 9, 425, 1927. ISIS

Harris, Charles Reginald Schiller. DUNS SCOTUS. Vol. 1 : The place of DUNS SCOTUS in medieval thought. Vol. 2 : The philosophical doctrines of DUNS SCOTUS. IX + 380 p.,; 401 p. Oxford, Clarendon Press, 1922. ISIS

Reviewed by ERICH HOCHSTETTER, *Deutsche Literaturzeitung*, 2538-2540, 1927.

Lehmann, Hermann. Zu NICOLAUS MYREPSUS. *Archiv für Geschichte der Medizin*, 17, 299-306, 1925. ISIS

« Also fällt das schöne Märchen von der angebl. Übersetzung des *Dynameron* des N. MYREPSOS durch NICCOLÒ DA REGGIO in sich selbst zusammen ! LO PARCO hatte es nur noch einmal zur Blüte bringen wollen und auch AMMONIUS ist entlarvt ! Denn er gibt eben keinen NICOLAUS ALEXANDRINUS, der nur von AMMONIUS hervorgezaubert worden war. Auch werde ich in meiner grossen Arbeit noch zeigen, dass er überhaupt nur einen einzigen NICOLAUS, nämlich SALERNITANUS gegeben hat, wenn NICOLAUS nichtbloss der Name eines Arzneibuches überhaupt bedeutet wie bei CAEL. AURELIANUS *acut. morb.* I 17, S. 65 eines solchen des HERAKLIDES TARENTINUS. NICOLAOS der Byzantiner mit dem Beinamen MYREPSOS ist eben weiter nichts als unser NICOLAUS SALERNITANUS, stark erweitert und vermehrt und ins Griechische übersetzt. »

Lull, Ramón. The book of the beasts. Translated from the Catalan by E. ALLISON PEERS. IX + 90 p. London, BURNS, OATES, 1928. ISIS

Muyldermans, J. La domination arabe en Arménie : extrait de l'histoire universelle de VARDAN. Traduit de l'Arménien et annoté. 176 p. Louvain, J. B. ISTAS, 1927. ISIS

Reviewed by R. P. BLAKE, *American Historical Review*, 33, 428, 1928.

Peers, E. Allison. A life of RAMÓN LULL. Written by an unknown hand about 1311, and now first translated from the Catalan, with notes and appendix. 86 p. London, BURNS OATES and WASHBOURNE, 1928. ISIS

(Polo, Marco). Le livre de MARCO POLO, citoyen de Venise, haut fonc-

tionnaire à la Cour de KOUBILAI-KHAN, généralissime des armées mongoles, gouverneur de province, ambassadeur du grand khan vers l'Indo Chine, les Indes, la Perse et les royaumes chrétiens d'Occident. Rédigé en français sous la dictée de l'auteur en 1295 par RUSTICIEN DE PISE, revu et corrigé, par MARCO POLO lui-même, en 1307, publié par G. PAUTHIER en 1865, traduit en français moderne et annoté d'après les sources chinoises par A. J. H. CHARIGNON, T. 1, v + 268 p.; t. 2, 275 p. Imprimé à la chinoise, d'un seul côté du papier. Pékin, A. NACHBAUR, 1924-1926. ISIS

Reviewed by PAUL PELLIOT, *T'oung Pao*, 25, 156-169, 1927.

Steele, Robert. Luru vopo vir can utriet. *Nature*, 121, 208-09, 1928. ISIS

« Every now and then a fresh attempt is made to solve this cipher attributed to ROGER BACON in the « Epistola de secretis operibus artis et naturae et de nullitate magiae » (see for example, *Nature*, Sept. 4, 1926, p. 352). These words have no manuscript authority whatever; they appear for the first time in an edition of the « Epistola » printed in Paris in 1542 from a poor Ms., and seem to be due to an attempt to reproduce the text before him by the editor, ORONTIUS FINÉ. The passage reads thus : 'Sed tamen salis petrae LVRV Vo Po Vir Can Vtriet sulphuris et sic facies tonitruum... ' (f. 52). »...

Stephenson, J. The classification of the sciences according to NASIRUDDIN TUSI. *Isis*, 5, 329-38, 1923. ISIS

Important correction to p. 333, kindly suggested by the late professor E. WIEDEMANN of Erlangen (d. January 1928). Samâ'-i-ṭabî'î is the φυσικὴ ἀκρόασις (Physica auscultatio) of ARISTOTLE; and Samâ'-o-'âlam (wrongly printed in the original, with 'ain at the end of the first word instead of hamza) means Coelum et Mundus, probably the περὶ οὐρανοῦ and περὶ κόσμου of ARISTOTLE. I must confess to having failed to recognize these titles in their Persian disguise. J. S.

Tallgren, Oiva Johannes. Un point d'astronomie gréco-arabo-romane. A propos de l'Astronomie espagnole d'ALPHONSE X. *Neuphilologische Mitteilungen*, 29, 39-44, Helsinki, 1928. ISIS

XIVth Century (whole and first half).

Bigongiari, Dino. The text of DANTE's Monarchia. *Speculum*, 2, 457-462, October 1927. ISIS

Browne, Edward Granville. The Tajaribu's-Salaf, a Persian version of the Arabic Kitabu'l-Fakhri, composed by HINDUSHAH IBN SANJAR AS-SAHIBI AL-KIRANI in 723/1323. *Royal Asiatic Society*, Centenary Supplement, 245-254, 1924. ISIS

Gaudio, Antonio del. DANTE letto da un medico. Fisiologia della generazione umana nel canto XXV del Purgatorio. *Arch. di storia d. scienza*, 5, 101-113, 1924; 6, 121-138, 1925; 8, 176-199, 1927.

ISIS

Examen de la théorie de la génération exposée par DANTE, et comparaison de cette théorie avec celle de STATIUS en particulier. L. G.

Gui, Bernard. Manuel de l'Inquisiteur. Édité et traduit par G. MOLLAT, avec la collaboration de G. DRIOUX. 2 vols. (*Les Classiques de l'histoire de France au Moyen Age*). Paris, CHAMPION, 1926-27. ISIS

Reviewed by VINCENT FLIPO, *Journal des Savants*, 134, 1928.

Guilland, R. Essai sur NICÉPHORE GRÉGORAS. L'homme et l'œuvre. XI + 308 p. Paris, GEUTHNER 1926. Correspondance de NICÉPHORE GRÉGORAS, texte édité et traduit. 1 vol. XXII + 392 p. Paris, Les Belles-Lettres, 1927. ISIS

Reviewed by LOUIS BRÉHIER, *Journal des Savants*, 35-40, 1928.

Lippmann, Edmund O. von. Zur Geschichte des Schiesspulvers und des Salpeters. Sonderabdruck aus der *Chemiker-Zeitung*, Nr. 1, 1928. ISIS

«In der Sitzung vom 11. Februar 1326 gab der Florentiner Rat nach längerer Besprechung, mit 55 gegen 33 Stimmen, also durchaus nicht einmütig, seine Einwilligung kund, dem RINALDO DI VILLAMAGNA (dem Orte dieses Namens bei Florenz ?) auf fünf Jahre hinaus 30 Goldgulden (= 364 heutige Goldlire) Monatsgehalt, ferner Ersatz bestimmter persönlicher Unkosten, und einige sonstige Vorrechte zu bewilligen, wogegen er mit seinen Gehilfen für die Stadt metallene Kanonen sowie eiserne Geschosse und Kugeln zu giessen, und die nötigen Vorräte an Schiesspulver herzustellen habe. Dieser Beschluss ist nach DAVIDSOHN (Geschichte von Florenz, 4, 487) « die erste sichere urkundliche Bezeugung » solcher Art... »

Pelliot, Paul. Note sur la carte des pays du Nord-Ouest dans le King che ta tien. *T'oung Pao* 25, 98-100, 1927. ISIS

Bibliographical note on a map of Central Asia dating from 1329-1332. J. K. W.

Schuster, Julius. Secreta Salernitana und Gart der Gesundheit; eine Studie zur Geschichte der Naturwissenschaften und Medizin des Mittelalters. Mittelalterliche Handschriften. Festgabe zu HERMANN DEGERING, Leipzig, 1926, p. 203-237, 2 pl., 6 textfig.

ISIS

Apropos of an illustrated French herbal in the Prussian National Library, Berlin (Hamilton 407). It contains 210 illustrations of plants, with names in French or Latin. The legends are very brief : aloen, ase puavae, ache ravin, apium emorradium, armoise moienne, etc. These illustrations are

placed at the end of the Ms. (fol. 229-82). The rest (228 fol.) is divided as follows :

Die Handschrift « hebt an : Cy commence le livre que Maycoes et Ypocras furent et les aultres maistres qui cy apres sont nommes qui extrahuent de phisique pour congnoistre la force des herbes (87 Blatt). Sodann folgt eine lange Heilmittellehre (Blatt 88-185) mit Kapiteln, z. B. pour l'opilacion du foie; contre le mal d'ydropisie, pour mal de la rate, contre jaunice, de la pierre etc. Das Explicit bezeichnet es als das unter dem Namen Thesaurus pauperum bekannte Medizinbuch des maistre JEHAN SAUVAIGE. An dritter Stelle (Blatt 147-185) findet sich eine Diätetik. Als vierter Teil (Blatt 186 bis 204) erscheint Tractatus qui dicitur flos medicine compilatus in studio Salerni a magistro JOHANNE DE MEDIOLANO instructa medicali doctore egregio. Den Beschluss (Blatt 204-228) bilden Verordnungen von Arzneimitteln. Und hier steht nun : Ce sont les receptes des omguemens et experimens lesquels fuient apris et enseignes au roy PHILIPPE LE BEL et a monseigneur de Valoys. » The last sentence gives the date. Monseigneur de Valois is PHILIPPE VI LE HARDI (born 1293) who became king in 1328; this Ms. was thus written some time before 1328. SCHUSTER compares this herbal with later ones, reaching the important conclusion : « Die Frühdrucke Herbarius zu teutsch, Gart der Gesundheit, Ortus sanitatis, Arbolayre, Grant Herbier, Great Herbal sind nichts anderes als nachplatearische Fassungen des salernitanischen Simpliciariums. » This is an important contribution to the study of botanical iconography. G. S.

(**Shunjô Hôin**, fl. at the beginning of XIVth cent.) HÔNEN the Buddhist saint. His life and teaching. Compiled by imperial order. Translation, historical introduction, explanatory and critical notes by HARPER HAVELOCK COATES and RYUGAKU ISHIZUKA. XCIV + 956 p., 4 loose pages of errata, many large plates, one of which is colored. Kyôto, CHIONIN, 1925. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 365-7, 1927.

Willard, J. F. Inland transportation in England during the fourteenth century. *Speculum* : A journal of mediaeval studies, 1, 361-374, October 1926. ISIS

Transportation of goods by highway and riverway, according to Professor WILLARD, was neither as slow nor as dangerous as is often supposed. « The most vivid picture is that of a large amount of movement along the roads and streams and with it the lack of isolation of mediaeval towns and villages. » J. K. W.

XIVth Century (second half).

Curry, Walter Clyde. CHAUCER and the mediaeval sciences. XXII + 267 p. New York, Oxford University Press, 1926. ISIS

Reviewed by ROBERT K. ROOT, *Speculum*, 114-116, 1928.

Galbraith, Vivian Hunter. The Anonimalle chronicle, 1333 to 1381;

from a Ms. written at St. Mary's Abbey, York, and now in the possession of Lieut.-Col. Sir WILLIAM INGILBY, Bart., Ripley Castle, Yorkshire. XLIX + 216 p. (*Publications of the University of Manchester*, 175; Historical Series, 45). New York, LONGMANS, 1927. ISIS

Reviewed by W. E. LUNT, *Speculum* 3, 120-121, 1928.

Lint, J. G. de. Representations in the Utrecht manuscript of GUY DE CHAULIAC of instruments for the reduction of the uvula. *Annals of Medical History*, 9, 408-410, 1927. ISIS

Thomson, S. Harrison. Three unprinted Opuscula of JOHN WYCLIF. *Speculum*, 3, 248-253, 1928. ISIS

XVth Century (whole and first half).

Feis, Oswald. Gesuch eines mittelalterlichen Arztes um Wiederanstellung. *Archiv für Geschichte der Medizin*, 20, 178, 1928. ISIS

Letter from Dr. CONRAD VON BONTENBACH, city physician of Francfort, to the council of the city, dated 1436.

Feis, Oswald. Empfehlungsschreiben des Bischofs von Mainz für seinen Arzt Meister PETER LANG aus dem Jahre 1439. *Archiv für Geschichte der Medizin*, 20, 179, 1928. ISIS

Fischer, Hermann. Eine Blüteperiode der pharmakognostischen Literatur im 15. Jahrhundert. *Archiv für Geschichte der Mathematik*, 10, 397-404, 1928. ISIS

(Ibn Ḥajar al-'Asqalânî). Lisân al-Mîzân. Six vols. 492, 514, 448, 494, 440, 868, 12 p. Haidarâbâd, Dâ'iratul Ma'ârif, 1329-31 (1911-13). ISIS

Reviewed by F. KRENKOW, *Journal Royal Asiatic Society*, 541-2, 1926.

Sarton, George. A sidelight upon geographical knowledge in the first half of the fifteenth century. *Isis* 9, 118-119, 1927. ISIS

Showing that in 1440, the people of Ghent did not know and could not determine the respective distances between Ghent and Amiens and Ghent and Liége (some 175 km. versus 145). G. S.

Stehlin, Karl, and **Thommen, Rudolf.** Aus der Reisbeschreibung des PERO TAFUR, 1438 und 1439. Basel, Verlag der historischen und antiquarischen Gesellschaft, 1927. ISIS

(Tafur, Pero). PERO TAFUR, travels and adventures, 1435-1439. Translated and edited with an introduction by MALCOLM LETTS. (*The*

Broadway Travellers). XV + 261 p., 2 maps, 7 ills. London, ROUTLEDGE, 1926. ISIS

PERO TAFUR (1410—c. 1484), a Spanish nobleman, traveled widely in the Near East, Italy, and Central Europe, and recorded his experiences in considerable detail. While at Mt. Sinai he met NICOLO DE' CONTI, who was on his way home from India. TAFUR's narrative includes a detailed description of Venice and many observations of interest on commercial matters. J. K. W.

XVth Century (second half).

Birkenmajer, Alexander. MARCO DA BENEVENTO (1465-1522) und die angebliche Nominalistenakademie zu Bologna (1494-1498). *Philos. Jahrb.*, 38, 333-335, 1925. ISIS

Champion, Pierre. LOUIS XI. Deux tomes. 236 p.; 408 p. Paris, Champion, 1927. ISIS

Reviewed by RICHARD A. NEWHALL, *American Historical Review*, 33, 635-6, 1928.

Connolly, James L. JOHN GERSON, reformer and mystic. (*Université de Louvain, Recueil de travaux publiés par les membres des Conférences d'histoire et de philologie*, 2me série, 12me fasc.) XXII + 408 p. Louvain, Librairie Universitaire, 1928. ISIS

Reviewed by A. HYMA, *American Historical Review*, 33, 684, 1928.

Drecker, Joseph. Ein Instrument, eine Karte und eine Schrift des Nürnberger Kartographen und Kompastmachers ERHARD ETZLAUB. *Annalen der Hydrographie und maritimen Meteorologie*, Juni 1917; 217-224, 1 Taf.

EHRHARD ETZLAUB became a citizen of Nuremberg in 1484; he died there in 1532. According to AUGUST WOLKENHAUER, he made a map of Nuremberg in 1492, and two other maps of the Empire in 1492 and 1501. DRECKER shows « Dass zwei Instrumente von der Hand ETZLAUBS erhalten sind. Dass ERHARD ETZLAUB schon in den Jahren 1511 und 1513 zu seinen Karten sich der Darstellungsart bedient hat, die wir gewöhnlich Mercatorprojektion nennen. Ferner soll ein Manuskript ETZLAUBS (oder eine Abschrift eines solchen) bekannt gegeben werden, dass einzige, was wir ausser den kurzen Legenden auf seinen Karten von ihm besitzen. » G. S.

Gould, R. T. The landfall of COLUMBUS : an old problem re-stated. *The Geographical Journal*, 69, 403-429, May 1927. ISIS

Argument in favor of Watling Island as the landfall of COLUMBUS 1492. J. K. W.

Hassinger, H. Deutsche Weltkarten-Inkunabeln. *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 455-482, 1 plate, 1927. ISIS

In the Morgan library in New York there is a German woodcut map of

the world printed by HANS RÜST, a reproduction of which was published by LUDWIG ROSENTHAL in 1924 (*Isis*, 8, 544). RÜST's map so closely resembles two maps by HANS SPORER, one in the city library at St. Gall and the other in the university library at Würzburg; that there is little doubt that all three were derived from the same original. HASSINGER dates them between 1475-1482; hence they are among the earliest printed maps extant and are probably the very earliest of German origin. They are typically medieval in content — somewhat resembling the Ebstorf map (1284). HASSINGER gives a detailed description of all three maps with a reduced photographic facsimile of the one at St. Gall. J. K. W.

Klebs, Arnold C. and **Sudhoff, Karl.** Die ersten gedruckten Pestschriften. A. C. KLEBS, Geschichtliche und bibliographische Untersuchungen; K. SUDHOFF, Der Ulmer Stadtarzt und Schriftsteller HEINRICH STEINHÖWEL. 264 S., mit Abb. in Text, 24 Tafeln, und Faksimile von STEINHÖWEL's Büchlein der Pestilenz, Ulm 1473. München, Münchner Drucke, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 430-33, 1927.

Kornaus, Jan. JOANNES DLUGOSZ, the Polish geographer of the XVth century. *Prace Geograficzne*, 5, 81-126, 1925. (In Polish with an English summary). ISIS

On the geographical work of the historian DLUGOSZ (1415-1480), who was also « the first original and conscientious worker in the field of Polish geography », several monographs have been written by Polish scholars. In the present work DLUGOSZ's meticulous care in gathering data on his native land for his *Chorographia Regni Poloniae* is demonstrated by a detailed examination and comparison with existing geography. J. K. W.

Larsen, Henning. The vocabulary of the old Icelandic medical Ms. : Royal Irish Academy 23 D 43. *Journal of English and Germanic Philology*, 26, 174-197, 1927. ISIS

For the contents of this Ms. see note published in *Isis* 10, 139-40. Further studies were published by LARSEN on the same subject as follows : Ms Royal Irish Academy 23 D 43, *Modern Philology*, Chicago, May, 1926. Nok et Harpestraeng Handskrift, *Danske Studier*, Copenhagen, 1924 (This deals with Ms L-2-27, Trinity College, Dublin, which is a copy of the Academy Ms.) G. S.

Maldonado de Guevara y Andrés, Francisco. El primer contacto de blancos y gentes de color en América : Estudio sobre el diario del primer viaje de CRISTÓBAL COLÓN. (*Universidad de Valladolid, Publicaciones de la sección de estudios Americanistas*, Serie 1, no. 5.) 100 p. Talleres tipográficos « Cuesta », n. d. (1924 ?). ISIS

Marsh-Edwards, J. C. The first voyage of AMERIGO VESPUCCI, 1497. *The National Review*, 517, March 1926, 130-137. ISIS

Brief argument in support of the authenticity of the first voyage. J.K.W.

Pfeilsticker, Walther. Eine württembergische Hebammenordnung von ca. 1480. Ein weiterer Beitrag zu GEORGE BURCKHARDS « Hebammenordnungen ». *Archiv für Geschichte der Medizin*, 20, 95-98, 1928. ISIS

Ribeiro, Patrocinio (1882-1923). A nacionalidade portuguesa de CRISTOVAM COLOMBO. The Portuguese nationality of CHRISTOPHER COLUMBUS. The much discussed problem of his actual nationality at last disposed of through the conclusive decifration of his hieroglyphic sign. Portuguese text, followed by English translation by ANTONIO CRUZ. Lisboa, J. CARDOSO, 1927. ISIS

Scalinci, Noe. L'opusculo De podagra et de morbo gallico di ANTONIO GALATEO, ed una sua epistola dedicatoria al Re FEDERICO D'ARAGONA. *Bollet. dell'Istituto Storico Italiano dell'Arte Sanit.*, Anno 7, 151-157 1927. ISIS

Sumien, N. La correspondance du savant florentin PAOLO DAL POZZO TOSCANELLI avec CHRISTOPHE COLOMB. X + 113 p. Paris, Société d'Éditions Géographiques, Maritimes et Coloniales, 1927. ISIS

Argument in favor of the authenticity (called in question by the late HENRY VIGNAUD) of the famous correspondence in which TOSCANELLI set forth for COLUMBUS' benefit his theory of the practicability of reaching the spice islands by sailing westward from Spain. J. K. W.

Thorndike, Lynn. Some minor medical works of the Florentine renaissance. *Isis*, 9, 29-43, 1927. ISIS

The works dealt with are the following : JOHN OF AREZZO : *De procuratione cordis* (or *De valitudinis cordis procuratione*) before 1464, in 3 books, the third being called *De venenis*; BERNARDUS TORNIUS (1452-1497) : *De tuenda sanitate*; GIOVANNI MARTELLINI (1464-1512) : *De decretoriis diebus* (critical days). « It may be admitted that our three treatises are works of minor importance, yet they probably reflect fairly enough the general character of the ordinary run of medical thought and literature at that time. Although written in the period commonly designated as the High Renaissance, in cultured Florence, and under the Medicean Maecenate, they are in the main compilations and continuations of the medical thinking and literature of the preceding medieval centuries. And a broad streak of what we should today pronounce superstition — occult virtues and bits of sympathetic magic, physiognomy and astrology — runs through all three. They contain nothing to suggest that the members of the MEDICI family (despite its auspicious name) had an unusual interest in promoting medical knowledge or exercised any enlightened patronage in that direction. Indeed, what JOHN OF AREZZO has to say in another treatise of the prevalence of medical quacks and impostors in fifteenth century Florence and their acceptability to magnates as well as to populace, gives us the impression that its medical standards were, if anything, somewhat below the medieval average. » THORNDIKE's

paper is followed by the table of contents of the first treatise, and by two extracts from it, one of them being a very interesting discussion of mushrooms. G. S.

Tolman, Mayo. The origin of syphilis. *Journal of Social Hygiene*, 9, 546-551, New York, 1923. ISIS

Ulloa, Luis. CHRISTOPHE COLOMB catalan : La vraie genèse de la découverte de l'Amérique, avec un appendice sur les COLOMBO et COLOMO castillans et sur le passeport donné à COLOMB, en avril 1492, pour se rendre aux Indes. 404 p. Paris, Librairie Orientale et Américaine, 1927. ISIS

Wright, John Kirtland. The LEARDO map of the world, 1452 or 1453. With a note on the reproduction of the map by A. B. HOEN. *American Geographical Society, Library series*, no. 4). v + 90 p., 10 fig. New York, American Geographical Society, Broadway at 156th Street, 1928. ($ 15; text alone, $ 2). ISIS

« In 1906 ARCHER M. HUNTINGTON presented to the American Geographical Society one of three known maps of the world signed and dated by the Venetian, GIOVANNI LEARDO. Of these, the oldest, as well as the crudest and simplest, is preserved in the Communal Library at Verona and carries the date 1442. The second (1448), somewhat more elaborate in design, belongs to the Civic Museum at Vicenza. The Society's map, the largest of the three, bears the signature in the lower right-hand corner : JOHANES LEARDUS de Venetteis me fezit abano domini 145 (?). The last digit in this inscription is partly mutilated; the date, however, is probably either 1452 or 1453. » The American Geographical Society has now made this rare treasure available to the world by publishing an admirable full-sized facsimile reproduction. This involved nine superimposed colored printings which were executed with considerable care. WRIGHT's lucid explanation and discussion of the map is published in a separate volume, which I am glad to say, is of a handy size (there is nothing more annoying than to handle and read folio editions.) This map, drawn on a piece of parchment (724 × 594 mm.) is of the circular type, with Jerusalem in the center, east at the top and the ocean all around. The seas are uniformly blue, except the Red Sea, which is red. Mountains, rivers and lakes are also represented. A lake called Sandy Sea lies in the midst of the Sahara. There are less pictorial elements than on many other medieval maps, yet this map is very decorative. The sources are mainly classical and patristic, yet some names betray the influence of MARCO POLO and perhaps of other travelers, and the drawing of the shore lines is derived from the portolani. In particular, this map is closely related to the Catalan map of c. 1450 which is in the Este Library of Modena. There are also a few traces of the new Ptolemaic influence which made itself felt in Italy in the first half of the fifteenth century, e. g. the rivers Indus and Oechardes. WRIGHT gives a very detailed description, which can be easily followed by refering to the seven key maps. Each of the three LEARDO maps is encircled by a calendar. The calendar of the map under discussion consists of ten concentric circles, devoted, the first or innermost, to the dates of Easter from 1453

to 1547; the second to the names of the months, beginning with March (this remained the first month of the year in the Republic of Venice until 1797); it also tells the day, hour, and minute when the sun enters each of the twelve signs of the zodiac; the third to the sixth, to the phases of the moon; the seventh, to the dominical letters; the eighth and ninth to the lengths of the days in hours and minutes; the tenth, to the saints' days and religious festivals. G. S.

Leonardo da Vinci.

Blaschke, Wilhelm. LEONARDO und die Naturwissenschaften. (Rede). (*Hamburger math. Einzelschr.*, H. 4) 15 p. Leipzig, TEUBNER, 1928. ISIS

McCurdy, Edward. The mind of LEONARDO DA VINCI. 360 p. London, JONATHAN CAPE, 1928. ISIS

Popp, Anny E. LEONARDO DA VINCI : Zeichnungen. 90 p. Munich, R. PIPER, 1928. ISIS

Taylor (Mrs.) **Rachel Annand.** LEONARDO the Florentine; a study in personality. XXXI + 580 p., plates. London, RICHARDS Press, 1927. ISIS

Vaccaro, Leopold. LEONARDO DA VINCI, precursor of modern medicine. *Medical Life*, 35, 59-66, 1928. ISIS

XVIth Century (whole and first half).

A. — *Mathematics.*

Copernic. NICOLAI COPERNICI Torinensis de Revolutionibus orbium coelestium libri VI. Norimbergae apud IOH. PETREIUM. Anno M.D. XLIII. Reproduction en facsimile, 406 p., J. HERMANN, Paris, 1927 (250 fr.). ISIS

Très bonne reproduction, sur beau papier, ornée du portrait de COPERNIC gravé par NICOLAS DANDELEAU d'après un tableau du cabinet de DE LALANDE, et d'une reproduction du tableau du grand peintre d'histoire de la Pologne JOHANN ALOISIUS MATEJKO (Cracovie, 1838-1893) : COPERNIC dans son observatoire à Frauenburg (conservé à l'université de Cracovie), de la première édition de l'immortel ouvrage de COPERNIC, écrit entre 1507 et 1514, parachevé jusqu'en 1530, qu'il ne se décida à publier qu'en 1539 sur les instances de ses amis, et dont le premier exemplaire put lui être apporté quelques jours avant sa mort, mai 1543. Cette réimpression fait honneur à l'éditeur J. HERMANN. L. G.

Rey Pastor, J. Los matemáticos españoles del siglo XVI. (*Biblioteca scientia* 2,) 164 p., Madrid, 1926. ISIS

J. REY PASTOR, qui dirige la *Rivista matemática hispano-americana*, consacre un travail fort intéressant aux mathématiciens espagnols du XVI^e^ siècle, travail qui s'ouvre par un coup d'œil rapide sur l'état des mathématiques au XV^e^ s. Il groupe alors sous trois chefs, qui correspondent d'ailleurs en même temps à trois époques, les mathématiciens espagnols, auxquels il joint PEDRO NUÑEZ : A) les arithméticiens, parmi lesquels il étudie PEDRO SÁNCHEZ CIRUELO (voir *Isis*, 10, 363-6), JUAN MARTINEZ SILICEO, dont il situe la naissance en 1477 (Arithmetica theorica et practica, 1514), JUAN DE ORTEGA (Tractato subtilissimo de Arismetica y Geometria, 1512), et ALVARO TOMÁS (Liber de triplici motu proportionibus..., 1509) — B) les algébristes MARCO AUREL (Libro primero de arithmética algebrática, 1552), PÉREZ DE MOYA (Arithmética practica y speculativa, 1562), ANTICH ROCHA (Arithmetica, 1564), et P. NUNEZ (Libro de álgebra en arithmética y geometria, 1564) — C) les géomètres : MOLINA CANO (Descubrimientos geometricos, 1598), JAIME FALCÓ (de circuli quadratura, 1587). Les renseignements biographiques sur ces savants font à peu près complètement défaut. La bibliographie, s'étendant jusqu'à la suppression de l'Academia de matematicas en 1624, cite les œuvres principales des mathématiciens étudiés dans le texte. L'absence d'un index dans un ouvrage de ce genre est tout à fait déplorable. L. G.

C. — *Natural sciences.*

Canano, Ioannes Baptista (1515-1578). GIROLAMO DA CARPI (1501-1556). Musculorum humani corporis picturata dissectio (Ferrara, 1541 ?). Facsimile edition annotated by HARVEY CUSHING and EDWARD C. STREETER. (*Monumenta Medica*, IV, under the general editorship of HENRY E. SIGERIST). 98 p. Florence, LIER, 1925. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 433-4, 1927.

Caraci, Giuseppe. GIACOMO GASTALDI, ENRICO ZELL e la cartografia piu antica a stampa della Germania. *Archeion, Arch. di storia d. scienza*, 8, 377-400, 1927. ISIS

Examen d'une carte d'Europe, datant de 1535, en huit feuilles, découverte à Florence en 1923 par L. BAGROW, et due à HEINRICH ZELL (*Isis*, 9, 157). CARACI n'admet pas l'attribution faite à ZELL par BAGROW, de deux autres cartes anonymes d'Allemagne, ni le fait que GASTALDI aurait tiré de ces cartes les éléments de sa carte d'Allemagne (1552). Il parle enfin d'une carte de 1542, de la Prusse, due à ZELL (R. Biblioteca Marciana), et qui n'a pas encore été décrite. L. G.

Delabarre, Edmund Burke. Dighton Rock : the earliest and most puzzling of New England antiquities. *Old-Time New England*, 14, 2, p. 51-72, ills., October 1923. ISIS

The Dighton rock in the Taunton River, Massachusetts, on account of its mysterious markings has excited the interest of scholars at least as early as 1680. The inscriptions have been ascribed to « inhabitants of Atlantis, lost tribes of Israel, Egyptians, Libyans, Scythians, Chinese, Romans, Druids, Catholic missionaries, pirates, and even pre-glacial men. » DELABARRE,

reading among other things the words « MIGUEL CORTEREAL, A.D. 1511 », believes he has found a clue to the fate of the Portuguese explorer who set sail from Lisbon in 1502 but failed to return. J. K. W.

Leroux, Désiré. La vie de BERNARD PALISSY. 129 p., 8 pl. Paris, CHAMPION, 1927. ISIS

Muñoz Maluschka, Dora. Cartografía primitiva americana : Memoria de prueba para optar al título de Profesora de Historia y Geografía. *Revista chilena de historia y geografía*, 55, 311-344, 1927 (to be continued). ISIS

This study will consider the following points : (A) the principal cartographic schools : (1) Sevillian cartography; (2) Lusitano-Germanic cartography; and (B) cartography as reflecting discovery and cosmographic hypotheses; it will be concluded with (C) a « chronological study of the principal extant maps constructed between 1500 and 1535. » J. K. W.

Nuñez, Cabeza de Vaca, Alvar. Schiffbrüche. Die Unglücksfahrt der Narvaez-Expedition nach der Südküste Nordamerikas in den Jahren 1528 bis 1536. Übersetzt und eingeleitet von FRANZ TERMER. (*Klassiker der Erd- und Völkerkunde*). VIII + 143 p., 21 facsimiles, 2 pl. Stuttgart, STRECKER and SCHROEDER, 1925. ISIS

Piri Re'is. Baḥrîje. Das türkische Segelhandbuch für das Mittelländische Meer vom Jahre 1521. Herausgegeben, übersetzt und erklärt von PAUL KAHLE. Band I. Text. 4 pp., IV + 64 pp. printed on one side only, maps. Band II Übersetzung. XLVIII + 88 p., maps, tables. I. Lieferung, Kapitel 1-28. Berlin, W. DE GRUYTER, 1926. ISIS

The Baḥrîye of PIRI RE'IS gives a very detailed account of the Mediterranean coasts probably based on earlier sailing manuals which have not come down to us. The present work is to consists of three volumes : 1) text; 2) translation; 3) commentary. To date the text and translation of parts covering a limited portion of the Aegean have appeared. Bd. II, Lief. I, also includes a general introduction. J. K. W.

Sabbatani, Luigi. Se LUCA GHINI abbia studiato a Padova. Atti del III Congresso Nazionale d. Soc. Ital. di storia delle scienze mediche e naturali (Venezia, 1925), Siena, 176-178, 1926. ISIS

Taylor, E. G. R. The earliest account of triangulation. *Scottish Geographical Magazine*, 43, 341-345, 1927. ISIS

On the method of triangulation described in the Libellus de locorum describendorum ratione etc. (1533), of GEMMA FRISIUS (1508-1555). J. K. W.

D. — *Medical sciences.*

Feis, Oswald. Empfehlungsschreiben für den Arzt Dr. PETER WILD

vom 10. Juni 1520. *Archiv für Geschichte der Medizin*, 20, 98, 1928. ISIS

Gundolf, Friedrich (eig. Gundelfinger). PARACELSUS. 135 p. Berlin, GEORG BONDI, 1927. ISIS

Reviewed by K. SUDHOFF in *Mitt. zur Geschichte der Medizin*, 26, 327, 1927.

Knetsch, Carl. Landgraf PHILIPPS Leibarzt Dr. JOHANN MECKBACH (1495-1555) und seine Sippe. *Zeitschrift der Vereins für hessische Geschichte und Landeskunde*, 55, 124-174, 1927. ISIS

Lejeune, Fritz. De geest der geneeskunde in de 16de eeuw. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 71-74, 1928. ISIS

Lejeune, Fritz. Zur spanischen Anatomie vor und um VESAL. *Janus*, 31, 413-22, 1927. ISIS

L'auteur met surtout en avant HERNÁNDEZ MOREJÓN, à qui est due l'impulsion que reçut en Espagne, au XVI[e] siècle l'étude de l'anatomie, et ALONSO RODRÍGUEZ de Guevara qui fut le premier professeur d'anatomie en Espagne, à l'université de Valladolid (fl. 1559). L. G.

(Paracelsus). Sieben Defensionen. Facsimile reprint of the original edition, Cologne 1564. VI + 52 p. Published by HENRY E. SIGERIST, in 300 copies. Leipzig, Talstrasse 38, 1928. ISIS

Editor's postface : « Die Defensionen sind vielleicht das persönlichste Werk von PARACELSUS. Drei Jahre vor seinem Tode, 1538, hat er sie geschrieben aus einem tiefempfundenen Bedürfnis heraus, sich zu rechtfertigen, vor sich selbst und der Welt. Es ist nicht nur sein ärztliches Handeln, nicht nur seine theoretischen Vorstellungen, die er verteidigt, sondern auch sein Charakter und seine Lebensweise, die so manchen befremdlich erschien. Gerade dieser persönlichen Note wegen dürfen die Defensionen nicht in Übersetzungen gelesen werden. Sie verlangen die kernige Sprache, in der sie gedacht waren. Dies war der Beweggrund zum vorliegenden Neudruck der den Text der ersten Ausgabe getreulich wiedergibt. » This charming booklet was distributed by Prof. SIGERIST to the friends of the Institut für Geschichte der Medizin and his personal friends as a New Year's gift. G. S.

Power, Sir d'Arcy. The birth of mankind or the woman's book, a bibliographical study. 58 p. (*The Library*, vol. 8, no. 1). London, the Bibliographical Society, 1927 (not seen). ISIS

Spunda, Franz. PARACELSUS. 180 S., 1 Faksimile und 31 Abb. (*Menschen, Völker, Zeiten, eine Kulturgeschichte in Einzeldarstellungen*, hrsg. von MAX KEMMERICH, VI). Wien, KARL KÖNIG, 1926. ISIS

E. — *Alia.*

Choisy, Eugène. CALVIN éducateur des consciences. 216 p. Neuilly, La Cause, 1926. ISIS

Reviewed in *Revue de synthèse historique*, 44, 184-5, 1927.

Mackinnon, James. LUTHER and the Reformation. Volume 2. The breach with Rome (1517-21). London, LONGMANS, 1928. ISIS

More, Sir Thomas. The dialogue concerning TYNDALE. Reproduced in black letter facsimile from WILLIAM RASTELL's Edition of MORE's English Works (1557). Edited with a modern version of the same and an essay on the spirit and doctrine of the dialogue by W. E. CAMPBELL. With an historical introduction and philological notes by A. W. REED. Portraits. London, Eyre and Spottiswoode, 1927. ISIS

Plattard, Jean. État présent des études rabelaisiennes. 12e cahier des Études françaises fondées sur l'initiative de la Soc. des professeurs français en Amérique. 92 p. Paris, Les Belles Lettres, 1927. ISIS

La fondation, au printemps de 1903, sur l'initiative d'ABEL LEFRANC de la Société des Études rabelaisiennes (*Rev. des études rabelaisiennes*, 1903-12, devenue depuis *Revue du Seizième siècle*) a suscité de nombreux travaux relatifs à la vie de RABELAIS, et à son œuvre (textes, sources, interprétations, etc.). PLATTARD note le chemin parcouru, marquant aussi les points qui restent encore obscurs ou incertains. L. G.

Prezzolini, Giuseppe. Vita di NICOLÒ MACHIAVELLI, Fiorentino. Milan, MONDADORI, 1927. ISIS

Valdès, Juan de (d. 1541). Dialogo de doctrina christiana. Reproduction en fac-similé de l'exemplaire de la Bibliothèque Nationale de Lisbonne (édition d'Alcalá de Henares, 1529), avec une introduction et des notes par MARCEL BATAILLON. Coimbra, Imprensa da Universidade, 1925. ISIS

XVIth Century (second half).

A. — *Mathematics.*

Bortolotti, Ettore. Sulla rappresentazione simbolica della incognita e delle potenze di essa introdotta dal BOMBELLI. *Arch. di storia d. scienza*, 8, 49-63, 1927. ISIS

Discussion d'une étude de H. WIELEITNER au même périodique vol. 7, 29-33 (*Isis*, 10, 152) avec une courte réponse de WIELEITNER : Erwiderung zu vorstehenden Aufsatz (p. 64). L. G.

B. — *Physical sciences and technology.*

(Brahe). TYCHONIS BRAHE Dani Opera omnia. Edidit I. L. E. DREYER (ob. 1926). Tomus 8, 471 p.; Tomus 12, IV + 488 p.; Tomus 13, IV + 398 p. Hauniae, Libraria Gyldendaliana, 1925-26. ISIS

Reviewed by J. K. FOTHERINGHAM in *Nature* 120, 578, 1927.

C. — *Natural sciences.*

Beltrán y Rózpide, Ricardo. America en tiempo de FELIPE II según el cosmógrafo-cronista JUAN LÓPEZ DE VELASCO. *Boletin de la Real Sociedad Geográfica*, 67, 35-77, 1727. ISIS

Synopsis, with maps, of the various administrative divisions of Hispanic America together with a list of the principal settlements founded by the Spaniards before 1575, as described in JUAN LÓPEZ DE VELASCO's Geografia y descripción universal de las Indias. J. K. W.

Bry, Théodore de (Liége 1528 — Francfort 1598). Voyages en Virginie et en Floride. Traduits du Latin par L. NINGLER et confrontés avec les textes anglais, français ou allemands. I.—Description merveilleuse et cependant véritable des mœurs et coutumes des sauvages de la Virginie (en 1585), écrite d'abord en anglais par THOMAS HARIOT. Illustrations en taille-douce par THÉODORE DE BRY, d'après les images prises sur le vif par JOHN WITH, envoyé dans ce but en 1585 et 1586. II. De trois voyages en Floride. L'un sous JEAN RIBAUT, en 1562; le second sous RENÉ DE LAUDONNIÈRE, en 1564; le troisième sous DOMINIQUE DE GOURGUES, en 1567. Illustrations en taille-douce par THÉODORE DE BRY, d'après les dessins de JACQUES LE MOYNE, qui a tout vu par lui-même. XV + 317 p., 65 planches. (*Collection illustrée des grands voyages en Amérique au XVIe siècle*). Paris, DUCHARTRE et VAN BUGGENHOUDT, 1927. ISIS

Clerk, Charly. Le voyage au Brésil de JEAN DE LÉRY, 1556-1558. Avec une introduction. 319 p. Paris, PAYOT, 1927. ISIS

The principal interest of the Voyage of LÉRY, who took part in the Huguenot colonial enterprise in Brazil under the Chevalier DE VILLEGAGNON, lies in the fact that here we find worked out in detail for the first time the legend of « le bon sauvage » that was later to play such an important part in French literature and political theory. J. K. W.

(Drake, Sir Francis). Sir FRANCIS DRAKE's voyage round the world 1577-1580 : two contemporary maps. Printed by order of the trustees, sold at the British Museum, and by BERNARD QUARITCH, Oxford University Press, and KEGAN PAUL, London, 1927. ISIS

Reviewed in *Geographical Review*, 340-1, 1928.

Fordham, Sir H. George. Some surveys and maps of the Elizabethan period remaining in manuscript : a paper read in section E at the Leeds meeting of the British Association. *The Geographical Journal*, 71, 50-60, January 1928. ISIS

On plans and local maps by CHRISTOPHER SAXTON (c. 1542/44 - c. 1610), PHILIP SYMONSON (d. 1598), and JOHN NORDEN (1548-1625 ?) J. K. W.

Genoviè, Lina. Le due carte della Toscana dipinte nel 1589 da Don STEFANO BUONSIGNORI nella R. Galleria degli Uffizi in Firenze. *L'Universo*, 8, 595-632, 5 maps, 1927. ISIS

The magnificent maps of the Florentine and Sienese dominions on the walls of one of the rooms in the Uffizi gallery were drawn not merely for decorative purposes; they « marked a notable advance in the progress of the geographic representation of Tuscany. » The wall maps are enlargements, with additional names and details, of two printed maps of BUONSIGNORI of 1584, which, in turn, owed much to a map of GEROLAMO BELLARMATO, Chorographia Tusciae, 1536. BUONSIGNORI's work was drawn on by G. A. MAGINI in his Italia nova, 1608 (*Isis*, 6, 164). J. K. W.

(Gerard, John. 1545-1612). GERARD's Herball : or generall historie of plantes. The essence thereof distilled by MARCUS WOODWARD from the edition of TH. JOHNSON, 1636. XIX + 303 p., illustrated. London, GERALD HOWE, 1927. ISIS

GERARD's Herball was first published in London, 1597. It was largely plagiarized from other works, but such was the custom of those days, and we must not be too severe, nor does it detract from the sweet Elizabethan flavor of his compilation. A revised and enlarged edition was prepared after GERARD's death by THOMAS JOHNSON, a London apothecary (London 1633, 1636). The present work is an abridgment of JOHNSON's edition of 1636, illustrated with reproductions of the original wood cuts. MARCUS WOODWARD's introduction contains some brief information on GERARD and his Herball. G. S.

Gudger, E. W. GUILLAUME RONDELET's pug-headed carp. The earliest record, 1554. *Natural History*, 28, 102-104, 2 fig., 1928. ISIS

Hunger, F. W. T. CHARLES DE L'ECLUSE (CAROLUS CLUSIUS), 1526-1609. *Janus* 31, 139-151, portr., 1927. ISIS

Discours prononcé à l'université de Leiden, le 19 octobre 1926.

Hunger, F. W. T. CHARLES DE L'ECLUSE (CAROLUS CLUSIUS), Nederlandsch kruidkundige. 1526-1609. XXIII + 445 p., 1 map, 4 portraits, 2 pl., 199 fig. 's-Gravenhage, MARTINUS NIJHOFF, 1927. ISIS

Reviewed by H. MARZELL, *Mitt. zur Geschichte der Medizin*, 27, 31, 1928.

Leclerc, Henri. Un naturaliste irascible : P. A. MATTHIOLE DE SIENNE. *Janus*, 31, 336-45, portr., 1927. ISIS

PIETRO ANDREA MATTIOLI (Sienna, 1500, 03, 23 — Trieste, 1577). Courte biographie et examen des Commentarii in libros sex PEDACII DIOSCORIDIS Anazarbei de materia medica (Venise, 1560), au point de vue des critiques violentes adressées par MATTIOLI à tous les « simplistes » : seuls, DIOSCORIDE, PLINE, GALIEN, trouvent grâce devant lui. L. G.

Mecham, J. Lloyd. ANTONIO DE ESPEJO and his Journey to New Mexico (1582-1583). *Southwestern Historical Quarterly*, 30, 114-138, October 1926. ISIS

Robertson, John W. FRANCIS DRAKE and other early explorers along the Pacific coast. 290 p., maps, illus., index. San Francisco, Grabhorn Press, 1927. ISIS

Reviewed in *Geographical Review*, 340-1, 1928; and by JOSEPH SCHAFER, *American Historical Review*, 410-411, 1928.

Wagner, Henry Raup. Sir FRANCIS DRAKE's voyage around the world : its aims and achievements. XII + 543 p., maps, ills., index. San Francisco, JOHN HOWELL, 1926. ISIS

Reviewed in *Geographical Review*, 340-41, 1928.

Waldman, Milton. Sir WALTER RALEIGH. (The Golden Hind Series). XI + 255 p. London, JOHN LANE, 1928. ISIS

D. — *Medical sciences.*

Chaumartin, Henry. Les idées d'un médecin de l'abbaye de Saint Antoine de Viennois sur le feu Saint Antoine au XVIe siècle. *Bul. Soc. Fr. d'Hist. Méd.*, 21, 277-81, 1927. ISIS

« Il s'agit de l'Épitome de GUY DIDIER, imprimé à Lyon, chez JEAN DE TOURNES, en 1560. »

Chaussade, A. La méthode scientifique d'AMBROISE PARÉ. *Revue de Synthèse historique*, 44, 35-50, 1927. ISIS

Clemen, Otto. Ein unbekanntes Pestregiment, Dresden 1566. *Archiv für Geschichte der Medizin*, 20, 175-178, 1928. ISIS

Apropos of a German treatise on the plague by JOH. NEEFE (Chemnitz 1499 - Dresden 1574) published at Dresden in 1566. G. S.

Favaro, Giuseppe. GABRIELLE FALLOPPIA, Modenese (MDXXIII-MDLXII). Studio biografico (con ritratto e figure). VI + 254 p. Modena, Tipografia Editrice Immacolata Concezione, 1928. ISIS

This is a very elaborate biography of the great anatomist FALLOPPIA, born at Modena in 1523, professor in Ferrara, Pisa, and finally 1551 in Padova where he died in 1562 (not 1563). This is apparently exhaustive as far as the biography itself is concerned, the author having taken considerable pains

to collect all the documents, printed or unprinted, throwing any light on the subject. A number of the documents, including many letters, are printed at the end (p. 203-38). Moreover the author has had the excellent idea of publishing a list of all the letters extant in chronological order (1548-62), and a chronology of all the known facts of FALLOPPIA's life. This is very helpful. The only thing which I missed — something essential — was a clear summary of the discoveries which may be ascribed to the great Modenese anatomist, but it is possible that the author reserves this study of FALLOPPIA's work for another volume. The present volume is adorned with a beautiful portrait, autographs, etc. By the way, the three autographs of the anatomist here shown, prove that he wrote his name GABRIELLE FALLOPPIA (the final letter is a not o; 4 l, 2 p); however his father signed : IERONIMO FALOPIA. After reading the rich record of so short a life, one can not help repeating with A. FABRONIUS, a former biographer : « Quid non sperari potuisset a tante viro, qui decessit in flore aetatis, si vita illi diuturnior data fuisset ? » The author of this book is the son of our much lamented friend, the great Galilean scholar, ANTONIO FAVARO (1847-1922); he is himself well known to our readers by his many studies on LEONARDO DA VINCI and GIROLAMO FABRICI D'ACQUAPENDENTE; he is director of the anatomical institute of the University of Modena. G. S.

Roth, Friedrich. Dr. GEORG AGRICOLA Ambergensis (1530-1575), Schüler und Freund MELANCHTHONS, Schulmeister, dann Stadtphysikus in Amberg. (Einzelarbeiten aus der Kirchengeschichte Bayerns, hrsg. vom Verein für bayrische Kirchengeschichte. Bd. 5) VII + 102 p. Gunzenhausen, Selbstverlag des Vereins, 1927. ISIS

(Stromayr, Caspar). Die Handschrift des Schnitt- und Augenarztes CASPAR STROMAYR in Lindau am Bodensee. The Lindau Ms. (P. I. 46), dated July 4, 1559; with an historical introduction and evaluation by WALTER VON BRUNN. 364 p. Berlin, Idra-Verlagsanstalt, 1925. ISIS

Reviewed by STEPHEN D'IRSAY in *Isis* 9, 367-370, 1927.

Teixeira de Mattos, E. Een geval van « het booze oog » met duivelbanning, a. 1598 te Antwerpen, bij eene gehuwde dame met typisch hysterische aanvallen. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 62-71, 1928. ISIS

Wilson, F. P. The plague in SHAKESPEARE's London. XII + 228 p., 16 pl. Oxford, Clarendon Press, 1927. ISIS

Reviewed in *Nature* 121, 368-9, 1928.

E. — *Alia.*

Olschki, Leonardo. GIORDANO BRUNO. (*Biblioteca di cultura moderna*). Bari, LATERZA, 1927. ISIS

(Scaliger, Joseph). Autobiography of JOSEPH SCALIGER. With autobiographical selections from his letters, his testament, and the funeral orations by DANIEL HEINSIUS and DOMINICUS BAUDIUS. Translated into English for the first time, with introduction and notes, by GEORGE W. ROBINSON. 128 p. Cambridge, Mass., Harvard University Press, 1927. ISIS

Schoell, Franck Louis. Études sur l'humanisme continental en Angleterre à la fin de la Renaissance. Avec une préface par EMILE LEGOUIS. (*Bibliothèque de la Revue de littérature comparée*, 29). VI + 261 p. Paris, CHAMPION, 1926. ISIS

I. Les emprunts de GEORGE CHAPMAN (c. 1559-1634) à MARSILE FICIN. — II. Les mythologistes italiens de la Renaissance et la poésie élisabéthaine. — III. GEORGE CHAPMAN et les Adages d'ÉRASME. — IV. Le Plutarque latin de XYLANDER en Angleterre. — V. L'Épictète latin de HIERONYMUS WOLFIUS en Angleterre. — VI. L'hellénisme français en Angleterre à la fin de la Renaissance. Ce qui paraîtra sans doute le plus original dans ce volume, c'est l'importance toute nouvelle attribuée à HENRI ESTIENNE, et à deux humanistes allemands de marque, G. XYLANDER et H. WOLFIUS, comme inspirateurs de la poésie et du drame anglais érudits vers la fin de la Renaissance.

XVIIth Century (whole and first half).

A. — *Mathematics.*

Bortolotti, Ettore. I progressi del metodo infinitesimale nell'opera geometrica di EVANGELISTA TORRICELLI. *Periodico di Matematiche*, 8, 19-59, 1928. ISIS

Brunschvicg, Léon. Mathématiques et métaphysique chez DESCARTES. *Revue de métaphysique et de morale*, 34, 277-324, 1927. ISIS

Étude critique de l'édition donnée par ÉTIENNE GILSON, du Discours de la méthode (512 p., VRIN, Paris, 1925). L. G.

Cairns, W. D. NAPIER's logarithms as he developed them. *American Mathematical Monthly*, 35, 64-67, 1928. ISIS

Cajori, Florian. The earliest arithmetic published in America. *Isis* 9, 391-401, 2 pl., 1927. ISIS

Analysis and discussion of the earliest arithmetical treatise published in America, namely the Arithmetica of PEDRO DE PAZ, in Spanish (Mexico City, 1623). The earliest arithmetic in English, JAMES HODDER's, appeared only 96 years later (Boston, 1719). CAJORI concludes : « as an elementary text book for beginners, PAZ's book ranks well among early seventeenth century arithmetics. While it possesses no originality of treatment, it exhibits good judgment in the selection of topics for beginners. It omits the progressions, also square and cube root, finger reckoning, and computation

with « contadores » (which is by dots and lines, or « auf den Linien » as the Germans called it.) All these topics were treated by PEREZ DE MOYA in the arithmetical part of his work. Numerous illustrative solutions render Paz's presentation concrete. His educational philosophy is teaching by example. » G. S.

Duclaux, Mary (A. Mary F. Robinson). Portrait of PASCAL. 232 p. London, FISHER UNWIN, 1927. ISIS

Reviewed by F. S. MARVIN in *Nature* 121, 449, 1928.

Maire, Albert. Bibliographie générale des Œuvres de BLAISE PASCAL. T. 1. Pascal savant, XVI + 331 p.; t. 2. Pascal pamphlétaire. 2 vols. II + 398 p., X + 510 p. Paris, L. GIRAUD-BADIN, 1925-1926. ISIS

Reviewed by L. GUINET, *Isis* 9, 370-2, 1927.

Roth, Leon. Correspondence of DESCARTES and CONSTANTYN HUYGENS, 1635-1647. Edited from manuscripts now in the Bibliothèque Nationale, formerly in the possession of the late HARRY WILMOT BUXTON. LXXV + 351 p. Oxford, Clarendon Press, 1926. ISIS

Reviewed by GEORGE SARTON. *Isis* 9, 434-37, 1927.

Soltau, Roger H. PASCAL : the man and the message. XIV + 216 p. London, BLACKIE, 1927.

ISIS

B. — *Physical sciences and technology.*

Horwitz, Hugo T. Ueber FAUSTO VERANZIO und sein Werk « Machinae Novae. » *Arch. di storia d. scienza*, 8, 169-175, 2 portr., 1927. ISIS

VERANZIO, d'une famille slave (Verančič) établie dès le XIV^e^ siècle en Dalmatie, est né en 1551 ; études à l'université de Padoue ; tient différents postes officiels aux cours de Vienne et Prague ; entre dans les ordres en 1594 après la mort de sa femme ; c'est pendant un séjour à Venise qu'il publie son Machinae Novae, un des plus importants ouvrages de technique du XVII^e^ siècle. De l'autorisation d'impression et de trois lettres conservées au Musée national de Budapest, et qu'il publie, l'auteur conclut que l'ouvrage parut entre le 15 juin 1615 et le 16 juillet 1616. L. G.

Kittredge, George Lyman. Dr. ROBERT CHILD, the remonstrant. *Transactions of the Colonial Society of Massachusetts* for 1919, 21, 1-146, Boston, 1920. ISIS

Reviewed by TENNEY L. DAVIS. *Isis* 9, 440-445, 1927.

Laemmel, Rudolf. Untersuchung der Dokumente des GALILEI'schen Inquisitionsprozess. *Archiv für Geschichte der Mathematik*, 10, 405-419, 1928. ISIS

« Wir schliessen also mit WOHLWILL, GERHARDI, GEBLER entgegen ESPINOIS,

FAVARO und anderen folgendes : das Schriftstück vom 26. Februar 1616 ist eine Mystifikation. Es ist insofern eine « Fälschung » als es 1616 sicher nicht geschrieben war und an jenem Tage auch sicherlich nicht danach gehandelt wurde. Sehr wahrscheinlich war die Notiz auch 1630 noch nicht vorhanden, als GALILEI für sein neues Werk « Über Ebbe und Flut » die Zensur einholte. Sehr wahrscheinlich ist die Notiz vom 25. und 26. Februar 1616 im Jahre 1632 ins Protokoll von 1616 hineingeschreiben worden. Seien wir uns klar, dass eine solche Fälschung in jener Zeit, da man missliebige Personen durch gedungene Mörder aus dem Wege zu räumen für alltäglich hielt, keine gar zu unglaubliche Methode war. ... Auf diesen Ausführungen ergibt sich kein Anhaltspunkt für die Frage nach der Folterung. Doch habe ich hier nach genauer Durchforschung des Manuskripts — ich habe sorgsam alle Blätter durchleuchtet — keinen Anlass, zu glauben, das auch die Akten von 1633 eine Unterschiebung oder sonstige formelle Unregelmässigkeit aufweisen. Da aber in den Akten von der Tortur nur insofern die Rede ist, als man die Folter dem GALILEI « androhen solle, so als ob sie auch ausgeführt würde », so erscheint es mir, in Berücksichtigung vieler anderer Momente, die noch hinzukommen, dass GALILEI nicht gefoltert wurde. Diese Meinung wird auch von WOHLWILL und den meisten neueren Schriftstellern vertreten und dürfte als gesichert angesehen werden .»

Magrini, Silvio. Il « de magnete » del GILBERT e i primordi della magnetologia in Italia in rapporto alla lotta intorno ai massimi sistemi. *Archivio di storia d. scienza*, 8, 17-39, 1927. ISIS

Sur le De Magnete de WILLIAM GILBERT (*Isis* 3, 107; 4, 142) et la lutte à laquelle se livrèrent en Italie les partisans et les détracteurs de GILBERT; l'auteur examine en particulier les travaux sur le magnétisme de G. B. DELLA PORTA, de P. SARPI, de G. BIANCANI, N. CABEI, etc., et la position prise par GALILÉE. L. G.

Olschki, Leonardo. GALILEI und seine Zeit. (Geschichte der neusprachlichen Wissenschaftlichen Literatur, Bd. 3). VIII + 480 p. Halle/Salle, MAX NIEMEYER, 1927. ISIS

Les deux premiers volumes de l'ouvrage de L. OLSCHKI ont été analysés précédemment (*Isis*, 4, 209; 7, 128-9). Celui-ci, plus spécialement consacré à GALILÉE (plus de 350 p.), s'ouvre par deux chapitres dont l'un est réservé à GIORDANO BRUNO, le second à NICCOLÒ TARTAGLIA. GALILÉE, ainsi fixé par rapport à la philosophie et aux mathématiques de ses prédécesseurs, est étudié surtout au point de vue littéraire et au point de vue philosophique, aussi bien en ce qui concerne ses découvertes astronomiques qu'en ce qui touche à ses commentaires du Roland furieux, de la Jérusalem délivrée, etc. Voir compte rendu par HANS LUDENDORFF, *Archiv für Geschichte der Mathematik*, 10, 471-2, 1928. (*Isis*, 10, 499-501). L. G.

Wohlwill, Emil (1836-1912). GALILEI und sein Kampf für die Copernikanische Lehre. I. Band, bis zur Verurteilung der copernikanischen Lehre durch die römischen Kongregationen, Hamburg und Leipzig, 1909. XX + 646 p. II. Band, nach der Verurteilung der Copernikanischen Lehre durch das Dekret von 1616. Aus dem Nachlass her-

ausgegeben mit einem Porträt und einer Tafel. XXII + 435 p. Leipzig, LEOPOLD VOSS, 1926. ISIS

Reviewed by HUGO DINGLER, *Isis* 9, 437-9, 1927.

C. — *Natural sciences.*

Fruin-Mees, W. PIETER FRANSSEN's Journaal van zijn Reis naar Mataram in 1630 en eenige wegen naar de hofplaats. *Tijdschrift voor Indische Taal-, Land- en Volkenkunde*, 66, 395-422, 1926. ISIS

Lescarbot, Marc. Nova Francia : a description of Acadia, 1606. Translated by P. ERONDELLE, 1609. (The Broadway Travellers, edited by Sir E. DENISON ROSS and EILEEN POWER). XXXI + 346 p. London, ROUTLEDGE, 1928. ISIS

(Manrique, Fray Sebastien). Travels of FRAY SEBASTIEN MANRIQUE, 1629-1643 : a translation of the Itinerario de las missiones orientales, with introduction and notes by Lt. Col. C. ECKFORD LUARD assisted by Father H. HOSTEN. Vol. I. Arakan. LXVI + 450 p., 6 maps, 3 plates, Oxford, printed for the Hakluyt Society, 1927. ISIS

MANRIQUE (c. 1587-1669) was a Portuguese missionary whose principal labors were carried out in Arakan (Burma) and Hindustan. His book, here translated and edited with extensive notes, gives a picture of life and travel in India at the time of the Mogul Empire. J. K. W.

Neuburger, Max. WILLIAM HARVEY. Gedenkworte anlässlich seines 350. Geburtstages. *Wiener klinische Wochenschrift*, Nr. 16; 12 p., 1928. ISIS

Pelsaert, Francisco. JAHANGIR'S India; the Remonstrantie of FRANCISCO PELSAERT, translated from the Dutch by W. H. MORELAND, and P. GEYL. XVII + 88 p. Cambridge, W. HEFFER, 1925. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 158-160, 1926. A report to the Dutch East India Co., written in 1626.

(Staden, Hermann von, *editor*). ADAM OLEARIUS. Die erste deutsche Expedition nach Persien (1635-1639). (*Alte Reisen und Abenteuer*, 20). 159 p., maps, ills. Leipzig. BROCKHAUS, 1927. ISIS

Brief introduction followed by excerpts from the book of OLEARIUS, who served as secretary and counsellor of an embassy sent to Persia by Duke FREDERICK III of Holstein-Gottorp. J. K. W.

D. — *Medical sciences.*

Celli-Fraentzel, Anna. Die Malaria im 17. Jahrhundert in Rom

und in der Campagna, im Lichte zeitgenössischer Anschauungen. *Archiv für Geschichte der Medizin*, 20, 101-119, 1928. ISIS

Apropos of ANGELO CELLI's memoir (Rome, 1925) reviewed in *Isis*, 9, 211. G. S.

Mercier, Raoul. Présentation d'un calcul vésical enlevé en 1610, par GIRAULT, au Maréchal ALPHONSE D'ORNANO. *Bul. Soc. Fr. d'Hist. Méd.*, 21, 316-320, 2 fig., 1927. ISIS

Papillault, G. L'origine de RENÉ DESCARTES, de son orientation médicale et de ses tendances philosophiques. *Bull. Soc. Fr. d'Hist. Méd.*, 21, 377-393, portrait, 1927. ISIS

E. — *Alia.*

(Bacon, Francis). The essayes or counsels civill and morall of FRANCIS, Lord VERULAM, Viscount St. Alban. 198 p. London, Cresset Press, 1928. ISIS

Boutroux, E. Des vérités éternelles chez DESCARTES. Thèse latine, traduite par CANGUILHEM. (*Bibliothèque de Philosophie contemporaine*). XL + 146 p. Paris, ALCAN, 1927. ISIS

Cajori, Florian. ROBERT BURTON's horoscope and the date of his birth. *Popular Astronomy*, 36, 3 p., 1 pl., January 1928. ISIS

Concluding from the study of BURTON's horoscope and its comparison with others that the author of the Anatomy of Melancholy was born in 1577 (not 1576, 1578). G. S.

Collett, Henry. Little Gidding : and its founder. An account of the religious community established by NICHOLAS FERRAR (1592-1637) in the seventeenth century. 63 p. London, S. P. C. K., 1925. ISIS

Guibert, Joseph. Le cabinet d'estampes de la Bibliothèque nationale, histoire des collections, suivie d'un guide du chercheur. 270 p., illustr. Paris, M. LE GARREC, 1926. ISIS

JACQUES DUPUY (1586-1656) fut le créateur du cabinet d'estampes vers 1650, en faisant étendre aux estampes l'obligation du dépôt légal institué en 1537 pour les livres. L. G.

Gurvitch, Georges. La philosophie du droit de HUGO GROTIUS et la théorie moderne du droit international. *Revue de métaphysique et de morale*, 34, 365-91, 1927.

Hale-White, Sir William. BACON, GILBERT, and HARVEY : being the

Harveian oration, delivered before the Royal College of Physicians of London, October 18, 1927. 54 p. London, BALE, SONS and DANIELSSON, 1927. ISIS

Kienast, R. JOHANN VALENTIN ANDREAE und die vier echten Rosenkreutzer-Schriften. (Palaestra, 152). VIII + 248 p. Leipzig, MAYER und MÜLLER, 1926. ISIS

This is an elaborate study, which is so important that I think it worth while to reproduce verbatim the conclusions relative to the earliest Rosicrucian literature.

« 1. ANDREAE bekennt sich nur als Verfasser der *Hochzeit*; er hat also seinen Anteil an der Rosenkreutzerei zugegeben und sich dadurch den möglichen üblen Folgen, die auch nicht ausgeblieben sind, ausgesetzt. Dass er den Rosenkreutzer-Schriften als Wissender gegenüberstand, geht aus seinen übrigen Äusserungen über die Bruderschaft hervor. Ein Grund, die Verfasserschaft von *Fama* und *Confession* zu verschweigen, wenn sie den Tatsachen entsprach, lag nicht vor. Sein Schweigen über den oder die Verfasser kann also nur die Rücksicht auf einen oder mehrere Freunde sein. Das stellt ihm ein sehr ehrendes Zeugnis aus und passt auch sonst zu dem, was wir von seinem Charakter wissen.

2. Die Untersuchung von Sprache und Stil ANDREAES, die ihre ausgesprochene Eigenart haben, liess zwischen der *Hochzeit* und den übrigen RC.-Schriften so wesentliche Unterschiede erkennen, dass mit Sicherheit zu behaupten ist, ANDREAE habe nur die *Hochzeit*, nicht aber *Fama* und *Confession* verfasst.

3. Der Ideengehalt der drei echten RC.-Schriften ist so gleichartig, dass derselbe leitende Gedanke überall klar zu Tage tritt. Die Interpretation hat im einzelnen diese gemeinsamen Züge aufgezeigt. Der Kern der Rosenkreutzer-Idee ist : Vereinheitlichung der neuen naturwissenschaftlichen Weltanschauung und der Religion im Sinne eines papstfreien, verinnerlichten Christentums. Kampf gegen die alchymistischen Auswüchse dieser Weltanschauung. Erkenntnis der Notwendigkeit innerer Umkehr zu frommem und gerechtem Leben. — Dazu kommt für die *Confession* : Überzeugung vom baldigen Eintritt des Weltendes. — Diese Idee wird gepredigt in dem anregenden Gewande einer mystischen Bruderschaft, die jedermann ohne Unterschied des Standes zum Beitritt auffordert. Die Personen der früheren Ordensmitglieder sind fingiert; der Frater ROSENKREUTZ ist ganz offenbar Andreaesche Erfindung. Eine seiner himmlischen Visionen ist die « *Chymische Hochzeit* CHRISTIANI ROSENKREUTZ *anno* 1459 ».

4. Die Abfassung der *Hochzeit* fällt nach *Vita* p. 10 und dem im Anhang I, 3 mitgeteilten *Breviarium vitae* in das Jahr 1605; für die Abfassungszeit der *Fama* haben wir als terminus ad quem das Jahr 1604.

5. ANDREAE gehörte in dieser Zeit einem Tübinger Kreise an, dessen geistiges Haupt CHRISTOPH BESOLD war.

6. BESOLD ist der Übersetzer von TRAJANO BOCCALINIS *General-Reformation*. Die Tendenz dieser Satire ist : alle äusseren oder von aussen herangetragenen Reformen scheitern; nur die innere Umwandlung, die Wiedergeburt, kann helfen. Also eine Tendenz, die zu der esoterischen Einstellung der Rosenkreutzer-Schriften trefflich passte.

7. Diese Schriften haben noch vor ihrer Drucklegung in österreichischen Ländern handschriftlich kursiert.

8. Im Jahre 1614 erscheinen zu Cassel : Die *General-reformation*, die *Fama* und die Antwort HASELMEYERS.

9. Im Jahre 1615 erscheinen bei demselben Drucker : Die *Fama* und die *Confession*, diese lateinisch und deutsch.

10. Der Frankfurter Druck von 1615 ist offenbar ein Nachdruck, der (aus geschäftlichen Gründen ?) alle drei Schriften zusammen veröffentlicht. Ihm folgt der echte Casseler Druck von 1616.

11. Von der *Chymischen Hochzeit* erscheinen 3 Drucke im Jahre 1616 zu Strassburg.

12. Damit sind die Veröffentlichungen der Bruderschaft zu Ende. Es fallen gelegentlich Andeutungen ANDREAES und BESOLDS über die Sache, die so weite Kreise gezogen hatte : aber nie mehr tritt eine Rosenkreutzerschrift des ehemaligen Tübinger Freundesbundes auf den Plan.

13. Was ausserdem in 17. und in der zweiten Hälfte des 18. Jahrhunderts unter der Flagge der Rosenkreutzer segelt, hat mit der alten echten Rosenkreutzerei nichts zu tun. Es bleibt ausserhalb des Rahmens unserer Untersuchung. » G. S.

XVIIth Century (second half).

A. — *Mathematics.*

Bosmans, Henri (S. J.) ANDRÉ TACQUET (S. J.) et son traité d'« Arithmétique théorique et pratique. » *Isis*, 9, 66-82, 2 pl., 1927. ISIS

ANDRÉ TACQUET (né et mort à Anvers, 1612-60) fut professeur de mathématiques à l'Université de Louvain. C'était un esprit profond et original qui publia plusieurs ouvrages. Le « Traité d'Arithmétique », ici analysé, parut en 1656 ; il contient un théorème intéressant sur les progressions infinies, qui fut publié la même année par WALLIS dans son Arithmetica infinitorum. Sur TACQUET voir une autre étude du P. BOSMANS (1925 ; *Isis* 8, 550) et l'article de F. CAJORI (A curious mathematical title page, 1922 ; *Isis* 5, 228). G. S.

Bosmans, Henri (S. J.) Sur un exemplaire de la première édition de l'Arithmetica theoria et praxis, d'ANDRÉ TACQUET, S. J. (Lovanii, Cyp. Coenestenius, 1656). *Annales de la Société scientifique de Bruxelles*, 47 (sc. mathém.) 39-42, 1927. ISIS

Bosmans, Henri. S. J. (1852-1928). La « logistique » de GILLES-FRANÇOIS DE GOTTIGNIES, de la Compagnie de Jésus. *Revue des Questions scientifiques*, 215-244, mars 1928. ISIS

GILLES FRANÇOIS DE GOTTIGNIES naquit à Bruxelles en 1630 ; élève d'ANDRÉ TACQUET (*Isis*, 9, 66-82) à Louvain ; admis dans la Compagnie de Jésus en qualité de novice en 1653 ; professeur de mathématiques au Collège Romain, à Rome ; il mourut à Rome en 1689. Son premier ouvrage fut *Astronomiae epistolae duae* (Bologne, 1665) en collaboration avec DOMINIQUE CASSINI ; il écrivit plusieurs autres ouvrages consacrés à l'astronomie et aux mathématiques. Le présent travail est consacré à ses quatre ouvrages sur la logistique,

notamment : 1. *Logistica minor* (Rome, 1675); 2. *Arithmetica introductio* (Rome, 1676); 3. *Clavis logisticae* (Rome, 1679); et *Logistica universalis* (Naples, 1687). « Du haut d'une des chaires de mathématiques les plus célèbres, il s'attacha à faire triompher cette thèse : que l'Algèbre — n'épiloguons plus sur le mot Logistique — était une science indépendante, qui devait s'édifier sur ses propres fondements, en ne supposant connus que les principes de l'Arithmétique élémentaire : principes qu'il résuma, pour atteindre ce but, dans son *Arithmetica introductio.* » G. S.

Brasch, Frederick E. Report of the meeting and exhibition commemorating the bicentenary of the death of Sir ISAAC NEWTON. *Popular Astronomy*, 36, 14 p., Jan. 1928. ISIS

Apropos of the meeting organized by the History of Science Society and other scientific societies in New York, Nov. 25-26, 1927. G. S.

Brasch, Frederick E. Sir ISAAC NEWTON's bicentenary. *Isis* 9, 427, 1927. ISIS

Announcing the New York bicentennial celebration of November 1927.

Broad, Charlie Dunbar. Sir ISAAC NEWTON. Annual Lecture on a master mind. Henriette Hertz Trust of the British Academy. 32 p. London, MILFORD, 1927. (2 s). ISIS

Brief account of NEWTON's life and of his scientific achievements, subdivided into optical (4 p.) and non-optical (12 p.) G. S.

Brodetsky, Selig. Sir ISAAC NEWTON : a brief account of his life and work. XII + 162 p., 1 map, 10 diagr., portrait. London, METHUEN, 1927. ISIS

L'auteur de ce charmant petit livre a réussi à marier une bonne biographie de NEWTON, où sa personnalité est nette, et un exposé clair de son activité créatrice. Livre parfait pour les étudiants, même s'ils n'ont qu'une vague teinture scientifique. L. G.

Cajori, Florian. Madame DU CHÂTELET on fluxions. *Mathematical Gazette*, 13, 252, December 1926. ISIS

Mahnke, Dietrich. LEIBNIZ als Begründer der symbolischen Mathematik. *Isis* 9, 278-293, 1927. ISIS

Completing CAJORI's article in *Isis* 7, 412-29, 1925. LEIBNIZ must be considered the founder of symbolic mathematics. Very elaborate demonstration partly based upon unpublished Mss. See also *Isis* 9, 160. G. S.

(Newton, Isaac). Frontispiece to vol. 9 of *Isis*, 1927. ISIS

Portrait of ISAAC NEWTON to celebrate the second centenary of his death at Kensington on the 20th of March, 1727. Reproduction of a mezzotint by JAMES MACARDELL (Dublin, c. 1729 - Hampsread 1765) after the painting by ENOCH SEEMAN (Dantzig 1694 - London, 1744). This reproduction was

made after the admirable copy in the collection of DAVID EUGENE SMITH, New York.

Pullin, V. E. Sir ISAAC NEWTON : a biographical sketch. (Benn's Sixpenny Library, no. 140). 80 p. London, BENN, 1927.

Snow, A. J. The rôle of mathematics and hypothesis in NEWTON's physics. *Scientia*, 42, 1-10, 1927; trad. franç., id., suppl., 1-10. ISIS

B. — *Physical sciences and technology.*

Allen, H. S. JAMES GREGORY, JOHN COLLINS, and some early scientific instruments. *Nature*, 121, 456, 1928. ISIS

Davis, Tenney L. KUNCKEL and the early history of phosphorus. *Journal of Chemical Education*, 4, 1105-1113, September 1927. ISIS

In his posthumous *Laboratorium Chymicum*, 1716, JOHANN KUNCKEL gives a racy narrative of his adventures with BALDUIN, who had discovered the phosphorescence of calcium nitrate, and with BRAND of Hamburg, who had prepared phosphorus from urine but had refused to disclose the method of its preparation. KUNCKEL proceeded to discover the method for himself, and in the following year, 1678, published an *Oeffentliche Zuschrifft von dem Phosphoro Mirabili*, etc., in which he described the astonishing properties of phosphorus but did not tell how the material could be made. The preparation of phosphorus seems first to have been made public by ROBERT BOYLE in a paper deposited with the Royal Society in 1680 but not published until 1682. T. L. D.

Green-Armytage, R. N. MILES BLOMEFIELD, English alchemist (1525-1574). Answer 4, *Isis* 9, 112, 1927. ISIS

Klemm, Friedr. Die Frühgeschichte der barometrischen Höhenmessung. *Opt. Rundschau*, 17, Nrn. 14, 16, 17, 18, 1926 (not seen). ISIS

Rosenfeld, L. La théorie des couleurs de NEWTON et ses adversaires. *Isis*, 9, 44-65, 1927. ISIS

Cette étude des controverses auxquelles la théorie des couleurs donna lieu est d'un grand intérêt, non seulement du point de vue historique ou biographique, mais aussi du point de vue méthodologique. Elle est basée sur les sources. G. S.

Thorndike, Lynn. Measurement of mountain altitudes. (Query 7). *Isis*, 9, 425-6, 1927. ISIS

C. — *Natural sciences.*

Borelli, Giovanni Alfonso (1608-79). Die Bewegung der Tiere. Ueber-

setzt und mit Anmerkungen versehen von MAX MENGERINGHAUSEN. 70 S., 28 Fig., auf 2 Taf. *Ostwald's Klassiker*, No. 221. Leipzig, Akad. Verlagsgesellschaft, 1927. ISIS

Dans son *De Motu Animalium* (1679), GIOVANNI ALFONSO BORELLI tente le premier essai d'explication des mouvements des membres, des mouvements respiratoires et circulatoires, par les lois de la mécanique. C'est dire l'importance de ce texte. L. G.

(Chardin, Sir John). Sir JOHN CHARDIN's Travels in Persia. With an introduction by Sir PERCY SYKES. XXX + 287 p., ills. London, Argonaut Press, 1927. ISIS

Handsome reprint of a two-volume edition of the travels of Sir JOHN CHARDIN (1643-1713) hitherto little known to bibliophiles. This edition was published in 1720 and contains only a portion of CHARDIN's complete works. It includes, however, much data of historical interest on the Persian court of the period, as well as a detailed description of the country and its people. J. K. W.

Daulier-Deslandes, André, (Vendomois, fl. 1664), The beauties of Persia. 41 p. London, Persia Society, c. 1927. ISIS

Translation of a French work originally published in Paris 1673 : Les beautez de la Perse ...par le sieur A. D. D. V.

Dehérain, Henri. Le voyage de FRANÇOIS LEGUAT dans l'Océan Indien (1690-1698), est-il imaginaire ? *Bulletin de la Section de Géographie, Ministère de l'Instruction Publique et des Beaux Arts*, 41, 159-177, 1926. ISIS

On the basis of documents preserved in the Archives of the Cape of Good Hope DEHÉRAIN establishes the authenticity of LEGUAT's voyage, which has been disputed by GEOFFROY ATKINSON. See also VIVIELLE, below J.K.W.

James, T. E. MARCELLO MALPIGHI (1628-1694). *Nature*, 121, 358-9, 1928. ISIS

Steck, Francis Borgia. The JOLLIET-MARQUETTE expedition, 1673. (*The Catholic University of America, Studies in American Church History*, vol. 6). XII + 325 p., bibliography. Washington, The Catholic University of America, 1927. ISIS

(Teonge, Henry). The diary of HENRY TEONGE, chaplain on board H. M.'s ships Assistance, Bristol, and Royal Oak, 1675-1679. Transcribed from the original manuscript and edited, with an introduction and notes, by G. E. MANWARING. (*The Broadway Travellers.*) X + 318 p., 8 pl. London, GEORGE ROUTLEDGE, 1927. ISIS

Original edition, London 1825.

Vivielle, J. L'Énigme du voyage de FRANÇOIS LEGUAT à l'Ile Rodrigues. *Bulletin de la Section de Géographie, Ministère de l'Instruction Publique et des Beaux-Arts*, 41, 147-158, 1926. ISIS

GEOFFROY ATKINSON in « The extraordinary voyage in French literature from 1700 to 1720 », Paris, 1922 (*Isis* 9, 162), attempts to prove that the *Voyage et Avantures de* FRANÇOIS LEGUAT *et de ses compagnons en deux isles desertes des Indes Orientales*, first published in 1708 and hitherto accepted as an authentic record, is pure fiction. On the basis of documents not known to ATKINSON, Commandant VIVIELLE argues that the narrative is based on historical fact. See also DEHÉRAIN, above. J. K. W.

D. — *Medical sciences.*

Carvalho, Silva. La liqueur stiptique de WEBER. *Bul. Soc. Fr. Hist. Méd.*, 21, 282-286, 1927. ISIS

Koerbler, Georges. L'origine de GIORGIO BAGLIVI. *Bul. Soc. Fr. Hist. Méd.*, 21, 321-322, 1927. ISIS

D'après son propre témoignage, il est né à Raguse en 1668. G. S.

Razzauti, Alberto. FRANCESCO REDI e la scoperta della patogenesi della scabbia (con documento inedito). *R. di storia d. sc. med. e natur.*, 18, 167-192, 1927. ISIS

Dans l'histoire de la découverte de l'agent de la galle, REDI n'a eu que le mérite d'être l'excitateur des recherches; l'honneur de la découverte doit aller concurremment à DIACINTO CESTONI et G. COSIMO BONOMO. L. G.

Riesman, David. THOMAS SYDENHAM, clinician. 52 p., New York, PAUL B. HOEBER, 1926. ISIS

Sonnié-Moret, P. La marquise de SÉVIGNÉ, une amie de la médecine, ennemie des médecins. 1626-1926. 124 p. Paris, BAILLÈRE, 1926. ISIS

E. — *Alia.*

Baratono, Adelchi. L'unità di SPINOZA. *Riv. di filosofia*, 18, 205-16, 1927. ISIS

Le fascicule entier de juillet-septembre 1927 de la *Rivista di filosofia*, qui porte en sous-titre : BENEDETTO SPINOZA, nel CCL anno dalla morte (MDCXXXII-MDCLXXVII) est consacré à SPINOZA. Il renferme, outre l'article ci-dessus mentionné, les études suivantes : LUIGI FOSSATI : SPINOZA e la critica moderna della Bibbia (215-32); — CESARE GORETTI : Il trattato politico di SPINOZA (233-47); — PIERO MARTINETTI : Modi primitivi e derivati, infiniti e finiti (248-61); — RODOLFO MONDOLFO : SPINOZA e la nozione del progresso umano (267-66); — ANNIBALE PASTORE : Il principio del metodo sperimentale nella filosofia di SPINOZA (266-72); — ADOLFO RAVA : Le opere di SPINOZA (273-316); — GIOLE SOLARI : La dottrina del contratto sociale

in SPINOZA (317-53); — GIUSEPPE TAROZZI : La necessità spinoziana e il determinismo contemporaneo (354-60); — EMILIO VILLA : La conversione di SPINOZA (commento alle prime pagine del « De intellectus emendatione ») (361-9); — ADOLFO RAVÀ : Bibliografia delli scritti italiani relativi a BENEDETTO SPINOZA pubblicati fino al 250 anniversario della sua morte (55 Nos, 370-5).

Brown, John (1830-). JOHN BUNYAN (1628-1688); his life, times, and work. The tercentenary edition revised by FRANK MOTT HARRISON. With marginal notes, addenda and appendices. XXIV + 515 p. London, Hulbert Publishing Co., 1928. ISIS

Original edition, London 1885.

Hubert, René. Revue critique de quelques ouvrages relatifs à la philosophie de MALEBRANCHE. *Revue d'histoire de la philosophie*, 1, 269-93, 1927. ISIS

Examen des travaux de VICTOR DELBOS : Etude sur la philosophie de MALEBRANCHE, XXX + 340 p., Paris, BLOUD et GAY, 1924; de J. VIDGRAIN : Le christianisme dans la philosophie de MALEBRANCHE, XXX + 429 p. ALCAN, 1925; et des ouvrages de H. GOUHIER signalés in *Isis*, 9, 522. L. G.

Jordan, George Jefferis. The reunion of the churches : a study of G. W. LEIBNITZ and his great attempt. VIII + 252 p. London, CONSTABLE, 1927. ISIS

Schlesinger, Ludwig. SPINOZA und EINSTEIN. *Scientia*, 42, 253-62, 1927; traduc. franç., id., supplém., 115-122. ISIS

XVIIIth Century (whole and first half).

A. — *Mathematics.*

Pasquier, L. Gustave du. LÉONARD EULER et ses amis. X + 126 p., avec un portrait d'EULER. J. HERMANN, Paris, 1927 (22 fr.). ISIS

GUSTAVE DU PASQUIER, qui prend une part active à l'édition des Oeuvres complètes D'EULER entreprise par la Société helvétique des sciences naturelles (*Isis*, 1, 244-5; 2, 165-6; 23 vol. parus de 1910 à 1927 sur 69 que doit comprendre l'ensemble : 28 vol. pour les mathématiques pures, 27 pour les travaux de mécanique et d'astronomie, 7 pour la physique, 4 pour la corespondance et 3 pour les « divers »), nous donne ici une bonne biographie, et un aperçu extrèmenemt condensé de l'œuvre de ce savant, un des plus grands savants de tous les temps. Bonne biographie certes, mais malheureusement un peu confuse, à cause précisément des détails qu'elle renferme sur les amis d'EULER, les BERNOULLI (DANIEL, NICOLAS II, JEAN II), MAUPERTUIS, d'ALEMBERT, FRÉDÉRIC II, etc. — on a presque une biographie pour chacun d'eux — et des digressions sur JACQUES HERMANN, CHRISTIAN GOLDBACH, sur l'Académie de Berlin, la Grande CATHERINE, etc. La vie d'EULER commandait l'ordonnance

du livre : 1. EULER à Bâle (1707-27); 2. Le premier séjour à Saint Pétersbourg (1727-41); 3. EULER à Berlin (1741-66); 4. Second séjour à Saint Pétersbourg (1766-83); 5. Le caractère de LÉONARD EULER; 6. Aperçu de l'œuvre scientifique d'EULER. L. G.

Petronievics, Branislav. Sur les nombres infinis de FONTENELLE. *Rendiconti d. R. Accademia dei Lincei, sc. fis.*, 26, 309-16, 1917. ISIS

« Le premier essai d'une théorie rationnelle des nombres infinis a été fait par B. FONTENELLE dans ses Éléments de la Géometrie de l'Infini (1727). Que cette théorie soit pleine de contradictions, la critique l'a bientôt relevé. Mais qu'elle possède une valeur historique incontestable, comparée avec les deux théories modernes des nombres infinis, celle de G. CANTOR et celles de G. VERONESE, c'est ce que je me propose de montrer dans cette Note. »

B. — *Physical sciences and technology.*

Lippmann, Edmund O. von. Bibliographische Berichtigungen, I. *Die Deutsche Zuckerindustrie*, S. 1098, 1927. ISIS

Niemand wusste vor MARGGRAF (1747), dass in der Rüber Zucker vorhanden ist. G. S.

Metzger, Hélène. La théorie de la composition des sels et la théorie de la combustion d'après STAHL et ses disciples. *Isis*, 9, 294-325, 1927. ISIS

« Les deux parties les plus importantes de la doctrine de STAHL, celles qui ont symbolisé aux yeux du XVIII[e] siècle l'apport original de la nouvelle école de chimie allemande, sont la théorie des sels et la théorie de la combustion. Ces théories, comme toutes celles qui concernent la philosophie de la matière, ne se présentent à nous ni comme un décalque pur et simple de l'expérience ainsi que le voudrait l'empirisme, ni comme le développement de principes rationnels posés *a priori* ainsi que l'exigerait le cartésianisme; elles résulteraient plutôt d'une réflexion de l'intelligence sur l'ensemble de l'expérience, en sorte que, bien que leurs conséquences soient vérifiées dans les grandes lignes par les observations faites au laboratoire, elles ne puissent jamais directement être soumises à la démonstration brutale des faits; l'anecdote suivante, en même temps qu'elle met en lumière ce caractère souvent inaperçu de la méthode employée par STAHL, montre que la théorie du phlogistique semblait, dès l'époque de sa formation, beaucoup plus satisfaisante que la théorie des sels... » 4 plates.

C. — *Natural sciences.*

Burpee, Lawrence J. Journals and letters of PIERRE GAULTIER DE VARENNES DE LA VÉRENDRYE and his sons : with correspondence between the governors of Canada and the French court, touching the search of the Western Sea (*Publications of the Champlain Society*). XXIII + 548 p., maps, bibliogr., index. Toronto, The Champlain Society, 1927. ISIS

The French texts (with English translations, notes, and a scholarly introduction), of the documents relating to these important eighteenth century explorations to the northwest and west of Lake Superior. Mr. BURPEE thinks it probable that « the mountains sighted (on the expedition of 1742-1743) were the Black Hills rather than the main range of the Rockies... »

J. K. W.

Bushnell, David I., jr. Drawings by A. DE BATZ in Louisiana, 1732-1735. 14 p., with six plates. Smithsonian miscellaneous collections, vol. 80, no. 5. Washington, Smithsonian Institution, 1927. ISIS

Drawings of Indian life. « The work of DE BATZ in the lower Mississippi Valley compares with that of JACQUES LEMOYNE DE MORGUES in Florida, and of JOHN WHITE in Virginia, during the latter part of the 16th century. And although the drawings were made by DE BATZ at a much later day, the natives with whom he came in contact were no less primitive in their manners and ways of life; consequently the three groups of pictures are of equal interest and importance. The six pictures now reproduced are in the private collection of the author. »

Defoe, Daniel (1661-1731). A tour thro' the whole island of Great Britain. With maps by HERMANN MOLL. Introduction by G. D H. COLE. Two volumes. London, PETER DAVIES, 1927. ISIS

First edition, London, printed and sold by G. STRATHAM, 3 vols., 1724-27.

Hutton, C. A. The travels of 'Palmyra' WOOD in 1750-51. *The Journal of Hellenic Studies*, 67, 102-128, 1927. ISIS

ROBERT WOOD (1716-1771) with two Englishmen made a long tour in the Levant in 1750-1751. « This paper deals only with the contents of the diaries and sketch-books, the value of which lies... in the careful records of the ancient sites visited. »

J. K. W.

Neander, Gustav. LINNÉ und die Lungenschwindsucht. *Janus* 31, 387-404, 1927. ISIS

Neves, Hermano. O livro de BERNARDO SANTUCCI, e a « Anatomia corporis humani » de VERHEYEN. Contribuiçao para o estudo da obra do anatómico cortonense. *Arquivo de Anatomia e Antropologia*, fundado e dirigido pelo H. DE VILHENA, 10, 315-346, 6 fig., Lisboa, 1926, 1927. ISIS

Apropos of SANTUCCI's *Anatomia do corpo humano* published in Lisbon, 1739, which the author shows was largely derived, not to say plagiarized, text and figures, from VERHEYEN's *Anatomia corporis humanis* (Naples edition, 1734). SANTUCCI's figures are similar to those of VERHEYEN's as they would be seen in a mirror.

G. S.

Réaumur, René Antoine Ferchault de. The natural history of ants. From an unpublished manuscript in the Archives of the Academy

of Sciences of Paris. Translated and annotated by WILLIAM MORTON WHEELER. XVII + 280 p., portrait. New-York, A. KNOPF, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis* 9, 445-7, 1927.

D. — *Medical sciences.*

Baragar, C. A. JOHN WESLEY and medicine. *Annals of Medical History*, 10, 59-65, 1928. ISIS

« ...Few, even of medical men, know that in the midst of a busy itinerant life he wrote and published a treatise on medicine, a booklet couched in such simple language as to be easily understood by the unlettered poor and yet in the treatment prescribed in accord with that of the foremost physicians of his day and in some of its definitions delightfully succinct and clear. The great number of editions and reprints published between 1747 and the middle of the nineteenth century are ample evidence of its popular success. »

Boerhaave, Hermann. Briefe an JOHANN BAPTISTE BASSAND in Wien. Ausgewählt und eingeleitet von ERNST DARMSTAEDTER. Mit Bild und Brieffaksimile. München, Münchner Drucke, 1927. ISIS

Reviewed by F. M. G. DE FEYFER, *Bijdragen tot de Geschiedenis der geneeskunde*, 8, 104-5, 1928.

(Boerhaave). Wallach, Emil. HERMANN BOERHAAVE's Abhandlung über eine zweite tödliche und sehr seltene Krankheit (Geschwulst der Brusthöle) « Atrocis rarissimique morbi historia altera conscripta ab HERMANNO BOERHAAVE Lugduni Batavorum 1728 » ins Deutsche übertragen. *Janus*, 31, 152-169, 1927. ISIS

Voir *Isis*, 8, 560, pour une précédente traduction de WALLACH.

Boldrini, Boldrino. Per la storia della medicina legale italiana : FRANCESCO EMANUELO CANGIAMILA e la sua Embriologia sacra. *Riv. di storia d. sc. med. e natur.*, 18, 237-44, 1927. ISIS

FR. E. CANGIAMILA (Palermo, 1702-1763). L'Embriologia sacra.....libri quattro est de 1745 (Palermo). L. G.

Feyfer, F. M. G. de. Overheidszorg bij hondsdolheid in de achttiende eeuw. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 109-111, 1928. ISIS

Hoffmann, Friedrich. Wie man manche schwere Krankheit durch Mässigkeit und Fasten kurieren kann. Mit einem Vorwort von SCHÖNENBERGER, neu herausg. von RICHARD KAPFERER. VIII + 44 S. Bad Harzburg, Jungborn-Verlag R. JUST, 1926. ISIS

Jenkins, E. H. JARED ELIOT, a pastor-physician of the eighteenth century, *Annals of Medical History*, 10, 25-33, 1928. ISIS

JARED ELIOT was a grandson of JOHN ELIOT, an Englishman who came to Boston in 1631, was minister for fifty years in Roxbury and apostle to the Indians. JARED was born in Guilford, 1685; he died in 1763. G. S.

Koerbler, Georges. Un médecin de Raguse à la cour autrichienne. *Bul. Soc. Fr. Hist. Méd.*, 21, 303-06, 1927. ISIS

Il s'agit de PETAR BIANCHI, mort en 1747 à Vienne. G. S.

Martin, Alfred. Experimentelle Übertragung der Pest im Jahre 1722. *Archiv für Geschichte der Medizin*, 20, 98, 1928. ISIS

Miranda, Joao Cardoso de. Prodigiosa lagosa descuberta nas Congonhas das minas de Sabará, que tem curado a varias pessoas dos achaques, que nesta Relação se expõem. Reimpressao deste raríssimo opúsculo precedida por um estudo bio-bibliográfico sôbre a abra e o seu autor, pelo AUGUSTO DA SILVA CARVALHO. XXVIII + 30 p., Imprensa da Universidade, Coimbra, 1925. ISIS

Cet opuscule, publié à Lisbonne sans nom d'auteur en 1749, et qui traite de l'eau naturellement minéralisée d'un lac dit Lagoâ Grande, assez voisin de la ville de Sabará, dans l'état de Minas Geraes, et des effets curatifs de cette eau, est attribué par CARVALHO, qui en donne une réimpression, à JOÃO CARDOSO DE MIRANDA, reçu chirurgien à Lisbonne le 27 mai 1722, et que l'on trouve à Bahia dès 1726. L. G.

Schevensteen, A. C. F. van. Une consultation de la faculté de médecine de Louvain au sujet de la lèpre à Anvers au début du XVIIIe siècle. *Janus* 31, 286-293, 1927. ISIS

Schotten, Heinrich. CHRISTIAN ANDREAS COTHENIUS (1708-89). *Leopoldina*, 2, 199-222, 1926. ISIS

E. — *Alia.*

Bila, Constantin. La croyance à la magie au XVIIIe siècle en France dans les contes, romans et traités. 160 p. Paris, GAMBER, 1925. ISIS

Physionomie générale du XVIII^{e} siècle. Définition de la magie. Le procédé magique. La variété de la magie. Doctrines. De la divination. La discussion sur les phénomènes magiques. Le maléfice. Alchimie. Astrologie. La magie dans les romans et les contes. La magie et la Franc-maçonnerie. Conclusions. Le fait de la croyance à la magie. Ses causes. La lutte contre cette superstition. Bibliographie.

Croce, Benedetto. Die Philosophie GIAMBATTISTA VICOS. Nach der

zweite Auflage übersetzt von ERICH AUERBACH und THEODOR LÜCKE. XI + 266 p. Tübingen, J. B. C. MOHR, 1927. ISIS

Italian edition, Bari, 1922; English translation, New York and London, 1913.

Hadjibeyli, Djeyhoun bey. Un historien azerbaïdjanien du début du XVIIIe siècle : ABBAS KOULI AGHA BAKHIKHANOFF. *Journal Asiatique*, vol. 207, 149-157, 1925. ISIS

XVIIIth Century (second half).

B. — *Physical sciences and technology.*

Bilancioni, Guglielmo. ALESSANDRO VOLTA et ANTONIO SCARPA. *Archeion, Arch. di storia d. scienza*, 8, 351-63, 1927. ISIS

VOLTA et SCARPA furent tous deux professeurs à Pavie; l'auteur évoque le voyage qu'ils firent ensemble à Vienne et en Allemagne en 1784, donne des extraits de lettres de l'un et de l'autre, et traite des applications de la pile voltaïque à la médicine. L. G.

Carnegie, Andrew. (1835-1919). JAMES WATT : die Lebensgeschichte des Erfinders der Dampfmaschine. Übersetzt von JOSEPH GRABISCH. (*Wege zum Wissen*, Band 87). 123 p. Berlin, ULLSTEIN, 1927. ISIS

Cau, Giovanni. ALESSANDRO VOLTA; l'uomo; la sua scienza; il suo tempo. 216 p., 16 pl. h. texte; AGNELLI, Milano, 1927. ISIS

Ouvrage de vulgarisation publié à l'occasion du centenaire de VOLTA (1745, 02, 18-1827,03,05). Trois parties : l'électricité avant VOLTA [des erreurs historiques, dont certaines sont de taille : l'auteur confond par ex. p. 17 en une seule personne VON KLEIST qui découvre en 1745 la condensation de l'électricité par le procédé de l'induction, et CUNAEUS qui fait, indépendemment, l'année suivante, la même expérience à Leyde (bouteille de Leyde)]; — VOLTA et son temps : jeunesse heureuse; maturité illustre; vieillesse noble; les découvertes de VOLTA avant la pile; la pile; depuis la pile; — l'électricité depuis VOLTA. — Des portraits de GALVANI, P. VAN MUSSCHENBROEK sont bien inutiles dans un ouvrage consacré à VOLTA. Aucune indication bibliographique. L. G.

Cau, Giovanni. ALESSANDRO VOLTA et son temps. *Rev. scientif.*, 27-08-1927, 481-7. ISIS

Doublet, E. Le baron de MARIVETZ (1728-94). *Procès-verbaux des séances de la Société des sciences physiques et naturelles de Bordeaux*, Année 1924-25, 15-18, 1926. ISIS

Fabietti, Ettore. ALESSANDRO VOLTA. 256 p., 18 pl. Milano, A. MONDADORI, 1927. ISIS

Livre populaire, plein d'un souffle ardent, écrit à l'occasion du centenaire

de la mort de VOLTA par un poète qui n'a pas voulu autre chose que faire revivre devant nous la personne physique et morale d'un des savants dont l'Italie est le plus fière. Il y a réussi. L. G.

Janet, Paul. Discours prononcé au Congrès international des physiciens tenu en commémoration du centenaire de la mort de ALESSANDRO VOLTA, associé étranger de l'Académie des sciences, à Côme, Lombardie, le dimanche, 11 septembre 1927. 9 p. Paris, Palais de l'Institut, 1927. ISIS

Lewton, Frederick L. SAMUEL SLATER and the oldest cotton machinery in America. *Smithsonian Report for* 1926, 505-511, 3 plates, Washington, 1927. ISIS

« The machines now in the National Museum, a carding engine and a spinning frame of 48 spindles, are two of the five machines built by SAMUEL SLATER and started in operation by him on December 20, 1790. »

Menschutkin, B. N. A Russian physical chemist of the eighteenth century. (MICHAEL VASILIEVIC LOMONOSOV). *Journal of Chemical Education*, 4, 1079-1087, September 1927. ISIS

The scientific attainments of LOMONOSOV (1711-1762) were first made generally known to students of the history of chemistry by the same B. N. MENSCHUTKIN who has written this article, who collected and published LOMONOSOV's surviving notes in a book in the Russian language on « M. V. LOMONOSOV as a physical chemist, » St. Petersburg, 1904. A large part of this work was translated into German by MAX SPETER and published as No. 178 of Ostwald's Klassiker der Exakten Wissenschaften, Leipzig, 1910. MENSCHUTKIN's book and his article in the *Annalen der Naturphilosophie*, 4, 203, supplied material for ALEXANDER SMITH's article on LOMONOSOV in the *Journal of the American Chemical Society*, 34, 104-119 (1912). A beautifully illustrated biography by MENSCHUTKIN was published by the Imperial Russian Academy in 1911 in commemoration of the two hundredth anniversary of LOMONOSOV's birth. Another biography by MENSCHUTKIN was published in 1925 at Moscow as one volume of the pamphlet Biographical Library issued by the Soviet Government.

The present article is illustrated with a vivid portrait. It recounts briefly the essential facts of LOMONOSOV's life, and contains valuable quotations from his writings. It makes us wish for more in English on the same subject. T. L. D.

Volpati, Carlo. ALESSANDRO VOLTA nella gloria e nell' intimità. XII + 328 p., 12 pl., FRATELLI TREVES, Milano, 1927. ISIS

Livre extrêmement vivant, qui n'a rien d'un panégyrique, mais présente vraiment un portrait physique et moral d'un « homme » dans son milieu, avec ses habitudes, sa faconde, sa jovialité, ses travers, son amour pour une chanteuse, nous montre ses relations, ses rivalités parfois avec ses amis et ses collègues, en particulier avec GIULIO CESARE GATTONI, PAOLO GAMBA, LAZZARO SPALLANZANI et C. BARLETTI. Nous suivons les travaux

scientifiques de VOLTA, fils de son temps; nous découvrons sa méthode de travail, pendant que nous le voyons s'intéresser aux questions théologiques ou se teinter de jansénisme. Enfin nous suivons VOLTA au milieu des bouleversements politiques de son temps. De tous les livres publiés à l'occasion du centenaire de VOLTA, si celui-ci n'est pas celui qui nous fait le mieux mesurer l'importance de la découverte de la pile, c'est vraiment le seul qui nous fasse connaître et aimer l'auteur de cette découverte. L. G.

Volpati, Carlo. Amici e ammiratori di ALESSANDRO VOLTA in Germania. 40 pp. estr. d. *Nuova Riv. storica*, 11, 1927. ISIS

Indication des traductions en allemand des travaux de VOLTA faites du vivant de l'auteur; des relations personnelles entretenues par VOLTA en Allemagne; parmi ceux qui en furent l'objet, VOLPATI met en avant C. E. PFAFF, A. DE HUMBOLDT, et G. C. LICHTENBERG, et publie quelques unes des lettres échangées avec VOLTA. L. G.

Volpati, Carlo. ALESSANDRO VOLTA e l'aeronautica, 12 pp. estr. d. *Riv. d'Italia*, fasc. 10, 1927. ISIS

L'auteur montre l'intérêt que portait VOLTA à l'aérostation dès les expériences de 1783 (J. ET E. MONTGOLFIER, Annonay, 5 juin 1783; J. A. C. CHARLES et les frères ROBERT, 27 octobre 1783 et surtout 1er décembre 1783, Paris). L. G.

(Volta, Alessandro). L'opera di ALESSANDRO VOLTA. Scelta di scritti originali raccolti ed illustrati dal Pr. FRANCESCO MASSARDI, pubblicati a cura della Associazone elettrotecnica italiana nel 1° centenario della morte. LXVIII + 580 p., 26 pl., ULRICO HOEPLI, Milano, 1927 (45 l.). ISIS

Ces extraits de VOLTA, que MASSARDI a heureusement groupés par ordre de matière, et non pas simplement chronologiquement, sont tirés de l'édition nationale en cours de publication (6 vol. chez le même éditeur), ou de l'édit. de 1916. On y trouvera les fragments essentiels sur l'électrophore, le condensateur, la pile. Ces extraits sont précédés des « Effemeredi Voltiane » publiés en 1899 à l'occasion du premier centenaire de la pile voltaïque par FRANCESCO FOSSATI, et mis à jour jusqu'au 5 mars 1927, centenaire de la morte de VOLTA, d'un extrait du discours prononcé par AUG. RIGHI le 23,09,99 sur VOLTA et la pile. Chaque extrait de VOLTA est accompagné d'une courte notice. — On est surpris de voir plus de 60 p. du vol. occupées par des monographies ayant trait aux vol. de l'édition nationale; il eut été plus convenable d'insérer quelques feuillets de nature franchement plubicitaire. L. G.

Volta, Alessandro. Scritti sull'aria inflammabile, sull'eudiometro e sopra i fuochi di Pietramala e Velleja. (*Collezione Universitas Scriptorum*, 14-15). 123 p. Roma, Leonardo da Vinci, 1928. ISIS

Volta, Luigi. La figura di ALESSANDRO VOLTA, un secolo dopo. *Bollettino di Matematica*, 24, 1-19, 1928. ISIS

Winderlich, Rudolf. Die ersten Schmelzversuche mit einem Sauerstoffgebläse. *Archiv für Geschichte der Mathematik*, 10, 427-431, 1928. ISIS

C. — *Natural sciences.*

Bolton, Herbert Eugene. ESCALANTE in Dixie and the Arizona strip. *The New Mexico Historical Review*, 3, 41-72, January 1928. ISIS

Professor BOLTON in the summers of 1926 and 1927 followed the route taken by Father S. V. DE ESCALANTE in northern Arizona and southern Utah in 1776. The present article is a translation with notes of the portion of ESCALANTE's journal narrating this part of his journey. J. K. W.

Bushnell, David I., Jr. Drawings by JOHN WEBBER of natives of the northwest coast of America, 1778. (*Smithsonian Miscellaneous Collections*, vol. 80, no. 10) 12 p., 12 plates. Washington, D. C., Smithsonian Institution, 1928. ISIS

JOHN WEBBER, English artist, born in London, 1752; accompanied Captain JAMES COOK on the latter's third and last expedition; died in London 1793.

Dahl, Maria. GOETHES mikroskopische Studien an niederen Tieren und Pflanzen im Hinblick auf seine Morphologie. *Jahrb. d. Goethe-Gesellschaft*, 13, 172-183, 1927. ISIS

Haecker, Valentin. GOETHES morphologische Arbeiten und die neuere Forschung. VI + 98 p., 28 fig. in text. Jena, FISCHER, 1927. ISIS

Hermannsson, Halldór. EGGERT ÓLAFFSON. A biographical sketch (*Islandica*, vol. 16). 56 p. Cornell University Library, Ithaca, N. Y., 1925. ISIS

Icelandic geographer, historian, poet, born at Svefneyjar in Breithafjord in 1726, died at sea with his young bride in 1768. His main work *Reise igiennem Island* (published by the Danish Academy, 2 vols., Sorö, 1772) was the first authoritative and comprehensive description of Iceland and its inhabitants. It was based upon materials collected throughout Iceland by EGGERT and by BJARNI PÁLSSON, who died in 1779. He translated from the French into Icelandic, a part of the *Oraculo manual* of the Spanish Jesuit BALTHASAR GRACIAN (1584-1658). G. S.

Keith, Sir Arthur. The bicentenary of JOHN HUNTER. *Nature*, 121, 210-212, 2 illustr., 1928. ISIS

Moebius, Martin. Eine Pflanzenmissbildung und GOETHES Beobachtungen darüber. *Bericht d. Senckenberg. Naturforsch. Ges.*, 57, 241-247, 1927. ISIS

Schuster, Julius. LINNÉ und FABRICIUS. Zu ihrem Leben und Werk. Drei Faksimiles mit einem Nachwort über das natürliche System. 32 S., 7 Abbildungen, 70 S. Faksimile. München, Münchner Drucke, 1928. ISIS

Inhalt : JOHANN CHRISTIAN FABRICIUS. Einige nähere Umstände aus dem Leben des Ritters VON LINNÉ (1780)./ Introductio ad ordines naturales e manuscripto GISEKII/ Introduction ad ordines naturales e manuscripto FABRICII (1792)/ Autobiographie des Naturforscher FABRICIUS (1819)/ Bibliographia Fabriciana.

Variot, G. Le cervelet de BUFFON au Musée d'histoire naturelle. *Bul. Soc. Fr. Hist. Méd.*, 21, 463, 1927. ISIS

Wade, Mark Sweeten. MACKENZIE of Canada; the life and adventures of ALEXANDER MACKENZIE, discoverer. With illustrations. Edinburgh, BLACKWOOD, 1927. ISIS

Wrong, Humphrey Hume. Sir ALEXANDER MACKENZIE, explorer and fur-trader. (Canadian men of action, 4). 171 p. Toronto, MACMILLAN, 1927. ISIS

Reviewed in *American Historical Review*, 33, 708, 1928.

D. — *Medical sciences.*

Goulard, Roger. Lettres de maîtresse sage-femme (1780), de maître-chirurgien (1786), de maîtrise d'apothicaire (1788). *Bul. Soc. Fr. Hist. Méd.*, 21, 467-471, 1927. ISIS

Graves, Charles B. Dr. PHILIP TURNER of Norwich, Connecticut (1740-1815). *Annals of Medical History*, 10, 1-24, portrait, 1928. ISIS

Henneguy, Félix. Cérémonie du centenaire de la mort de PHILIPPE PINEL, membre de la section d'anatomie et zoologie de l'Académie des sciences, à la Sorbonne, le lundi 30 mai 1927. 6 p. Paris, Palais de l'Institut, 1927. ISIS

Müller, Martin. Über eine Malariaepidemie zu Mannheim im Jahre 1761. *Archiv für Geschichte der Medizin*, 20, 137-149, 1928. ISIS

Royer, B. Franklin. The great sickness at Harrisburg, 1792, 1793, 1794. *Medical Life*, 35, 23-35, 1928. ISIS

Tischner, Rudolf. FRANZ ANTON MESMER als Vorläufer DARWINS. *Archiv für Geschichte der Mathematik*, 10, 476-7, 1928. ISIS

E. — *Alia.*

Anderson, H. B. ROBERT BURNS, his medical friends, attendants, and biographer. *Annals of Medical History*, 10, 47-58, 6 portraits, 1928. ISIS

Aulard, (François) Alphonse. Christianity and the French Revolution. Translated by Lady FRAZER. London, ERNEST BENN, 1927. ISIS

Published in French under the title : Le christianisme et la révolution française. Paris 1925 (*Isis*, 8, 560).

Badolle, Maurice. L'Abbé JEAN-JACQUES BARTHÉLEMY (1716-95) et l'hellénisme en France dans la seconde moitié du XVIIIe siècle. Préface de FERNAND LAUDET. 15 + 414 p., portrait. Paris, Les Presses Universitaires de France, 1926. ISIS

Gottschalk, Louis Reichenthal. JEAN PAUL MARAT; a study in radicalism. XV + 221 p., portrait. New York, GREENBERG, c. 1927. ISIS

(Kant). Uebergang von den metaphysischen Anfangsgründen der Naturwissenschaft zur Physik. Query no. 5 by HÉLÈNE METZGER, answer by ERICH ADICKES, *Isis*, 9, 424, 1927. ISIS

Korff, Hermann August. Geist der Goethezeit; Versuch einer ideelen Entwicklung der klassisch-romantischen Literatursgeschichte, Teil 1. (Die schwarzen Bücher, 4/5). 117 S. Leipzig, J. J. WEBER, 1927. ISIS

Reviewed by JULIUS SCHUSTER, *Archiv für Geschichte der Mathematik*, 10, 480, 1928.

Lenoir, Raymond. Le mesmérisme et la philosophie du monde. *Rev. d'hist. de la philosophie*, 1, 192-218, 294-320, 1927. ISIS

Palou, (Fray) **Francisco.** Historical memoirs of New California. Translated into English from the manuscript in the Archives of Mexico. Edited by HERBERT EUGENE BOLTON. In four volumes. I : XCVI + 331 p.; II : XII + 390 p.; III : XI + 399 p.; IV : XV + 446 p. Berkeley, University of California Press, 1928. ISIS

(Rousseau, Jean Jacques). A project of perpetual peace : ROUSSEAU's essay. Translated by EDITH M. NUTTALL, and printed in French and English. With an introduction by G. LOWES DICKINSON. XXV + 141 p. London, COBDEN-SANDERSON, 1928. ISIS

Schönebaum, Herbert. Der junge PESTALOZZI 1746-1782. IV + 234 p. Leipzig, O. R. REISLAND, 1927. ISIS

Reviewed by WALTER FEILCHENFELD, *Deutsche Literaturzeitung*, 2096, 1927.

Stephanides, Michael. Science in Greece before the Greek revolution. An educational revolution. 78 p. Athens, SACELLARIOS, 1926 (in Greek).

Showing that the intellectual movement which occurred in Greece between 1750 and 1821 was a real revolution in favor of scientific teaching. This was the natural repercussion of the enormous scientific and philosophic development which had taken place in western Europe, and chiefly in France, during the first half of the eighteenth century. G. S.

Tischner, Rudolf. FRANZ ANTON MESMER. Leben, Werk und Wirkungen. Mit Bibliographie aller Ausgaben seiner Schriften. 176 S., 9 Abbild. München, Münchner Drucke, 1928. ISIS

Inhalt: Einleitung. Die Vorläufer. MESMERS Leben. Die Werke. Seine Persönlichkeit. Die Wirkungen : Mesmerismus, Hypnotismus, Psychotherapie, Okkultismus, Neu-Geist-Lehre, Christian Science. Bibliographie. Register.

Variot, G. Le cerveau de VOLTAIRE. Ce qu'il en reste dans le musée de la Comédie Française. *Bul. Soc. Fr. d'Hist. Méd.*, 21, 260-276, 1927. ISIS

XIXth Century (whole and first half)

A. — *Mathematics.*

Agostini, Amedeo. Contributo alla storia della teoria delle serie. Esame di una corrispondenza inedita tra PAOLO RUFFINI e GIULIANO FRULLANI. *Arch. di storia d. scienza*, 7, 209-15, 1926. ISIS

Les lettres dont il est ici question chevauchent sur les années 1817-21; elles ont trait à une polémique entre RUFFINI et FRULLANI sur la nécessité qu'affirme RUFFINI de n'employer dans le calcul que les séries convergentes. L. G.

Gauss, Carl Friedrich. Werke. XI. Band., erste Abteilung. Herausgegeben von der Gesellschaft der Wissenschaften zu Göttingen. IV + 518 p. Berlin, SPRINGER, 1917. ISIS

Gauss, Carl Friedrich. Bestimmung der Anziehung eines elliptischen Ringes. Nachlass zur Theorie des arithmetisch-geometrischen Mittels und der Modulfunktion. Uebersetzt und herausgegeben von HARALD GEPPERT. (*Ostwalds Klassiker*, 225). 208 S. Leipzig, Akad. Verlagsges., 1927. (RM. 11,20) ISIS

GAUSS selbst hat über seine tiefgehenden Untersuchungen zum arithm.-

geom. Mittel und dessen Zusammenhang mit den elliptischen Funktionen und der Modulfunktion nur eine Abh. veröffentlicht, die hier an erster Stelle wieder abgedruckt ist (aus Comm. Gott. 4, 1818). Die anderen Untersuchungen (S. 27-186) sind in den « Werken » (hauptsächlich Bd. X) zwar veröffentlicht, aber ungeordnet und in verschiedenen Bezeichnungen. Der Herausgeber hat es nun übernommen, daraus ein einheitliches Ganzes zu schweissen. Das ist meines Erachtens etwas ganz Neues, wenigstens in dieser Sammlung ! Sehr dankenswert ist auch eine beigefügte Bibliographie,die alle an die Gauszschen Arbeiten in dieser Richtung anknüpfenden Abhandlungen bis zur Gegenwart umfasst. H. W.

Jacobi, C. G. J. Theorie der elliptischen Funktionen aus den Eigenschaften der Thetareihen abgeleitet. Herausgegeben von A. KNESER. (*Ostwalds Klassiker*, 224). 64 S., Kart. Leipzig, Ak. Verlagsges., 1927. (RM., 3,20) ISIS

Die hier veröffentlichte Vorlesung (deren Text selbst 48 S. beansprucht) wurde von C. W. BORCHARDT im Jahre 1838 ausgearbeitet, von JACOBI durchgesehen und mit Anmerkungen begleitet, schliesslich in dessen Gesammelten Werken I, S. 497, im Jahre 1881 veröffentlicht. Da diese Vorlesungen jetzt nur mehr in vollständiger Reihe verkauft werden, ist der Abdruck der Vorlesung, die immer noch aktuell ist, bes. für Studierende von Bedeutung. H. W.

Junge, Martha Elisabeth. Eine neue Auffassung der natürlichen Geometrie K. CH. F. KRAUSES (1835). *Ber. über die Verh. d. Sächs. Akad. d. Wiss. zu Leipzig, Math.-phys. Kl.*, 79, 124-133, 1927. ISIS

Klein, Felix. Vorlesungen über die Entwicklung der Mathematik im 19. Jahrhundert. Teil I. Für den Druck bearbeitet von R. COURANT und O. NEUGEBAUER. 385 S., 48 Figuren. Berlin, SPRINGER, 1926. ISIS

Reviewed by H. WIELEITNER, *Isis*, 9, 447-9, 1927.

Lamé, Gabriel. Examen des différentes méthodes employées pour résoudre les problèmes de géométrie. XII + 124 p., 2 pl. de fig. Réimpression fac-similé. J. HERMANN, Paris, 1927. ISIS

Réimpression d'un ouvrage fameux, depuis longtemps très rare, écrit par GABRIEL LAMÉ (Tours, 1795,07,22 - Paris, 1870,05,01), alors qu'il avait vingt deux ans. (L'éditeur actuel a modifié la page de titre pour y mettre son nom à la place de celui de son précédesseur : Vve COURCIER, 1813); de plus, la couverture porte : Exposé des méthodes pour résoudre... au lieu du titre exact reproduit ci-dessus, et que donne bien la page de titre intérieur). On y trouve en particulier (pp. 89-101) une nouvelle manière de calculer les angles des cristaux. Mais le vrai titre de gloire de LAMÉ, ce sont ses travaux sur l'élasticité : Propagation de la chaleur dans les polyèdres et équilibre intérieur des corps solides (1828), et Leçons sur la théorie mathématique de l'élasticité des corps solides (1852; 2e éd. 1866). En même temps qu'un mathématicien éminent, LAMÉ était un ingénieur remarquable. L. G.

Ocagne, Maurice d'. Souvenirs sur quelques mathématiciens français du XIXe siècle. *Revue des questions scientifiques*, 4e S., 12, 257-83, 1927. ISIS

Il est question de MICHEL CHASLES, JOSEPH BERTRAND, CHARLES HERMITE, HENRI POINCARÉ et GEORGES HUMBERT. L. G.

B. — *Physical sciences and technology.*

Cajori, Florian. Briefe von C. H. SCHUMACHER und W. STRUVE an F. R. HASSLER in Amerika. *Zeitschrift für Instrumentenkunde*, 47. Jahrgang, Heft 11, S. 532-536, 1927. ISIS

This is an interesting supplement to CAJORI's biography of HASSLER (1921; *Isis*, 4, 419). FERDINAND RUDOLPH HASSLER, born in Switzerland, 1770, came to the United States in 1805 and founded the United States Coast Survey in 1807; he died in 1843. The letters now published, date from 1832-41. G. S.

Darmstaedter, Ludwig. OTTO UNVERDORBEN and the discovery of aniline. *Industrial and Engineering Chemistry*, News Edition, vol. 5, no. 19, page 9, October 1927. ISIS

UNVERDORBEN's « Krystallin » (1826), RUNGE's « Kyanol » (1837), FRITZSCHE's « Anilin » (1840), and ZININ's « Benzidam » (1842) were shown to be identical by HOFFMANN in 1843. OTTO UNVERDORBEN, the first discoverer of aniline, was born October 13, 1806, at Dahme, in Brandenburg. His father died while he was still young, and his mother continued the family's banking and general merchandise business. He studied natural science with a private tutor and acquired a special interest in chemistry at the high school in Dresden. « In 1824 he entered a pharmaceutical school at Erfurt, and under the direction of JOHANN TROMMSDORF he began a series of chemical studies on a wide variety of materials. Among these were gums, especially guaiac and benzoin; hydrofluoric acid and its salts; manganic acid; oil of turpentine; oleic acid, etc. Destructive distillation was a favorite mode of attack at that time and in this way UNVERDORBEN obtained from DIPPEL's oil, four alkaline liquids, which were lated identified by ANDERSON as pyridine bases. The dry distillation of indigo and the isolation of « krystallin » were logical consequences of this work » (c. f. *Neues Journal der Pharmazie*, Oct. 1826) UNVERDORBEN studied for a time with HEINRICH ROSE in Berlin. « In 1828 he returned to Dahme and took over the management of his mother's business. He built a small laboratory and much of his spare time was spent in continuing his chemical investigations. He was a successful business man and was also recognized as an authority on agricultural matters. In 1848 he purchased a large estate and profitably worked the large marl beds on this property. He died at Dahme on December 27, 1873. » T. L. D.

Hartmann, Ludwig. Aus GEORG SIMON OHMS handschriftlichem Nachlass. Briefe, Urkunden und Dokumente. 255 S., 7 Tfln. München, Bayerlandverlag, 1927. (RM. 5.40) ISIS

Durch den vom Herausgeber geschriebenen verbindenden Text erhält

man ein vollständiges Lebensbild des so lang verkannten bedeutenden Gelehrten. (1789-1854). Ein sehr schönes und billiges Buch. H. W.

Horwitz, Hugo Th. Aus HERBERT SPENCERS Ingenieurzeit. *Geschichtsblatter für Technik, Industrie und Gewerbe*, 11, 241-259, 4 fig., 1927. ISIS

Jackson, George Gibbard. The ship under steam. Plates. London, FISHER UNWIN, 1927. ISIS

Lewis, Charles Lee. MATTHEW FONTAINE MAURY. The pathfinder of the seas. XVII + 264 p., 19 pl. Annapolis, Md., The United States Naval Institute, 1927. ISIS

Biography of one of the greatest American men of science, the Virginian MAURY (1806-1873), the founder of marine meteorology, one of the founders of oceanography. The author is associate professor in the United States Naval Academy. The book is partly based upon letters and other Mss., which were presented in 1912 by MAURY's only living child, Mrs. MARY MAURY WERTH, to the Library of Congress. Thus it is necessarily valuable and interesting. Yet it is very poorly written and composed, and quite uncritical. Some of the many illustrations were hardly worth reproducing, but others, including many portraits, are most interesting. The work is divided as follows; 1. His early years; 2. His three cruises; 3. He resorts to the pen; 4. His astronomical work; 5. His wind and current charts; 6. His physical geography of the sea; 7. His extra-professional interests; 8. His treatment by the « Retiring Board »; 9. Shadows of coming troubles; 10. As his friends and family knew him before the war; 11. His part in the Civil War : in Virginia; 12. His part in the Civil War: in England; 13. With MAXIMILIAN in Mexico; 14. Reunited with his family in England; 15. His last years in Virginia; 16. His posthumous reputation. G. S.

Liebig, Justus von. Experimentalchemie 1848. Faksimile des Kollegheftes KEKULÉS. Berlin, I. G. Farbenindustrie, 1927. ISIS

Lippmann, Edmund O. von. Vor hundert Jahren. (VII.) *Die Deutsche Zuckerindustrie*, S. 20, Jahrgang 1928, Nr. 1. ISIS

Apropos of CHANDELOT : Art du raffineur (Paris 1828).

Lippmann, Edmund O. von. Bibliographische Berichtigungen, II. *Die Deutsche Zuckerindustrie*, S. 1098, 1927. ISIS

MITSCHERLICH konstruierte (vor 1847) den ersten praktish brauchbaren Polarimeter. G. S.

Lorenz, Borislav. AMPÈRE und KANT. *Kant-Studien*, 32, 310-313, 1927. ISIS

Marshall, C. F. Dendy. Two essays in early locomotive history. London, Locomotive Publishing Co., 1928. ISIS

« The first of these two essays consists of an account of the history of the first hundred railway engines, based on a careful research of all the material available. Much of the existing information on the subject is unreliable, having been supplied by people either lacking in technical knowledge, or seeking to claim all the glory for one particular pioneer, or worse still, both.

The author is under neither of these disadvantages, and has spared no pains in studying all the contemporary evidence that is known, and gives references for all his statements. He has succeeded in unearthing several engines which have hitherto been unknown to historians. Illustrations are given of one or two which have not previously appeared in books on the subject; such as WILSON's « Chittaprat » and BURSTALL's « Perseverance »; the latter being one which has been wrapped in mystery down to the present day. The story is one of which we have good reason to be proud, because, out of the hundred, which number was attained in the middle of 1831, it is shown that ninety were British, two German, one or two French, and six or seven American. Moreover, only half of the ten foreigners were of any practical use, and none of them had any influence on the evolution of design.

The second essay gives an account of British locomotives in North America, and also contains some illustrations of great interest. Down to the year 1836 about 120 engines have been traced which were supplied to railways in the United States, after which the demand ceased altogether, and they built their own. Engines supplied to Canada are also dealt with. »

Matignon, Camille. JEAN BAPTISTE DUMAS. *Revue scientifique*, 417-24, portrait, 23 mai 1927. ISIS

Mayer, J. Robert. Beiträge zur Dynamik des Himmels und andere Aufsätze. 104 S. (*Ostwald's Klassiker*, 223) Leipzig, Akad. Verlagsgesellschaft, 1927. ISIS

La publication des Beiträge zur Dynamik des Himmels in populärer Darstellung (1848; pp. 1-59 de la présente éd.) complète heureusement les textes (No 180 de la même collection) où, pour la première fois, MAYER suit l'évolution des formes d'énergies chimiques depuis le soleil jusqu'à l'activité animale. Les autres travaux ici reproduits, par les soins de BERNHARD HELL, sont les suivants : Ueber notwendige Consequenzen und Inconsequenzen der Wärmemechanik (1869); Ueber Erdbeben (1870); Ueber die Ernährung (1871); Ueber Auflösung (1876). Ł. G.

Picard, Emile. La vie et l'œuvre de JEAN-BAPTISTE BIOT (1774-1862). Lecture faite en la séance annuelle du 12 décembre 1927. 39 p., portrait. Paris, Académie des Sciences, 1927. ISIS

Robinson, Victor. JONS JAKOB BERZELIUS (1779-1848). *Medical Life*, 35, 165-185, 1928. ISIS

Tilden, Sir William A. Sketch of BERZELIUS. *Medical Life*, 35, 187-209, 1928. ISIS

Reprinted from *Famous Chemists*, 1921.

C. — *Natural sciences.*

Baer, Carl Ernst von (1792-1876). First series of papers dedicated to his memory. Publications of the Commission for the History of Science, no. 2. 72 p. Leningrad, Academy of Sciences, 1927 (in Russian). ISIS

Contents : W. VERNADSKII. To v. BAER's memory; M. SOLOVJEV. Correspondence between v. BAER and the admiral I. KRUSENSTERN; E. RADLOV. C. E. VON BAER as philosopher. G. S.

Barkley, A. H. CONSTANTINE SAMUEL RAFINESQUE. *Annals of Medical History*, 10, 66-76, portrait, 1928. ISIS

Biography of the American naturalist RAFINESQUE, born at Galata, Constantinople, 1783, died in deepest poverty at Philadeplhia, 1840. G. S.

Garbett, L. G. Admiral Sir FRANCIS BEAUFORT and the BEAUFORT scales of wind and weather. *Quarterly Journal of the Royal Meteorological Society*, 52, 161-168, 1926. ISIS

BEAUFORT (1774-1857) after « much active service afloat in the early years of his career » served as Hydrographer of the British Navy from 1829 to his death. The famous scales, details regarding the origin and adoption of which are here given with constructive criticism, were first mentioned in BEAUFORT's private log in 1806; they were officially introduced in the navy in 1838 and are now employed throughout the English-speaking world. J. K. W.

Hare, Rosalie. The voyage of the Caroline, from England to Van Diemen's Land and Batavia in 1827-28. With chapters on the early history of Northern Tasmania, Java, Mauritius, and St. Helena, by IDA LEE (Mrs. CHARLES BRUCE MARRIOTT). XIV + 308 p. London, LONGMANS, 1927. ISIS

(Henderson, James). HENDERSON's narrative of an expedition to Lake Frome in 1843. *Proceedings of the Royal Geographical Society of Australasia*, 26, 85-128, illus., 1926. ISIS

Hitherto unpublished journal of JAMES HENDERSON who accompanied Captain C. E. FROME as surveyor on the expedition in the course of which Lake Frome was discovered. J. K. W.

Morris, Ralph C. The notion of a great American desert east of the Rockies. *The Mississippi Valley Hist. Rev.*, 13, 190-200, 1926. ISIS

« Le développement de cette partie des États-Unis, qui se trouve comprise entre le 100e méridien et les Montagnes Rocheuses, aujourd'hui partie de la région grande productrice de grains, a été retardé par cette idée fausse que c'était un désert. Des voyageurs de la première heure, comme LEWIS et CLARK, LONG, PIKE, donnèrent, à leur retour, des descriptions du caractère désertique du pays, et il fut admis qu'il y avait là un « Great American Desert »

comparable au Sahara. Cette erreur persista jusque vers 1880, mais disparut peu à peu, grâce au mouvement vers l'Ouest de la population. — Voir aussi F. C. SHOEMAKER, Traditions concerning the Missouri Question, *Missouri Hist. Rev.*, 253-262, Jan. 1922. » E. T. PLATT, in XXXVI[e] *Bibliographie géographique* 1926, 521, Paris, 1927.

Smith, Edgar F. ROBERT HARE (1781-1858), an early American chemist. *Archeion, arch. di storia d. scienza*, 8, 330-5, portr., 1927. ISIS

Dès 1801, ROBERT HARE expérimente la flamme oxhydrique et fond le platine. Nommé professeur de chimie à l'université de Pennsylvanie, il imagine l'emploi du Hg. comme cathode pour l'électrolyse des solutions salines ; synthèse de l'ammoniac au moyen de l'éponge de Pt comme catalyseur, etc. L. G.

Staszic, Stanislas. Carta geologica totius Poloniae, Moldaviae, Transilvaniae et partis Hungariae et Valachiae. Inventa per STANISLAS STASZIC anno 1806. Milles d'Allemagne 15 au degré. École des mines, Dabrowa Górnicza, 1926. ISIS

Reprint of the first geological map of Poland on the occasion of its centenary. Analysis of the original : R. DANYSZ, Étude critique d'une carte ancienne de Pologne dressée par S. STASZIC. Paris, JOUVE, 1913.

Villani, A. Licheni ritrovati nel Polesine dal Cav. G. GRIGOLATO, Rodigino. *Nuovo G. botanico ital.*, 34, 533-7, 1927. ISIS

GAETANO GRIGOLATO (Rovigo, 1799, id., 1884,) pharmacien, chimiste.

Wisniowski, Thadé. STANISLAS STASZIC, le père de la géologie polonaise. *Arch. di storia d. scienza*, 8, 42-8, 1927. ISIS

STANISLAS STASZIC (1755-1826), auteur du premier travail d'ensemble sur la géologie de la Pologne, (1815), de la première carte géologique de la Pologne, organisateur de l'industrie des mines de Pologne. L. G.

D. — *Medical sciences.*

Chance, Burton. Dr. RICHARD BRIGHT. An ophthalmologist's appreciation. *Annals of Medical History*, 9, 332-336, 2 fig., 1927. ISIS

Christian, Henry A. Kidney disease as described by RICHARD BRIGHT in the light of the knowledge of a century later. *Annals of Medical History*, 9, 337-346, 8 fig., 1927. ISIS

Hauser, Hilde. JOSEPH SERVATIUS VON D'OUTREPONT, Professor der Geburtshilfe und Frauenheilkunde in Würzburg (1775-1845). Würzburger Inaugural-dissertation, 1927. ISIS

Heine, Bernard (1800-1846). Versuche über Knochenregeneration.

Sein Leben und seine Zeit. Bearbeitet durch VOGELER, REDENZ, WALTER, MARTIN. Berlin, SPRINGER, 1926. ISIS

Keen, W. W. The beginnings of clinical teaching in the United States. *Isis*, 9, 363, 1927. ISIS

Clinical teaching in an United States Medical school was begun by GEORGE MCCLELLAN at Jefferson Medical College, founded by him in 1825. G. S.

Laennec, R. Théophile H. Documents inédits publiés à l'occasion de son centenaire. Paris, MASSON, 1926. ISIS

Menetrier, P. CRUVEILHIER (1791-1874). AESCULAPE, 182-7, 212-6, portr., 1927. ISIS

JEAN CRUVEILHIER (Limoges, 1791, Sussac, près Limoges, 1874). Étude de l'ulcère simple de l'estomac, des corps fibreux de la mamelle, de la paralysie progressive. Anatomie pathologique du corps humain (1828-42); Anatomie pathologique générale (1849-64). L. G.

(Müller, Johannes). Über die phantastischen Gesichtserscheinungen. Eingeleitet und herausgegeben von MARTIN MÜLLER. (*Klassiker der Medizin*, Bd. 32). 101 p. Leipzig, J. A. BARTH, 1927. ISIS

Meyerhof, Max. A short history of ophthalmology in Egypt during the XIXth century. *Bulletin of the Ophthalmological Society of Egypt*, 20, 33-52, 1927. ISIS

Neuburger, Max. ROMBERG consults PETER FRANK. A neurological consultation in 1817. *Medical Life*, 35, 19-22, 1928. ISIS

Translation by JOHN FALLON, from *Wiener Med. Wochenschrift*, n°. 37, 1912.

Robinson, Herbert Spencer. WILLIAM MACMICHAEL (1783-1807). His life, his works, and his editors. *Medical Life*, 34, 467-488, 1927. ISIS

E. — *Alia.*

Kern, Hans. Zur CARUS-Renaissance. *Archiv für Geschichte der Mathematik*, 10, 478-9, 1928. ISIS

Apropos of the rediscovery of CARUS's philosophy. CARL GUSTAV CARUS (1789-1869) German physician, physiologist, and psychologist, may be considered the founder of the psychology of the unconscious (rather than EDUARD VON HARTMANN). Many of his works have been recently republished and various publications devoted to them. G. S.

Pineau, Léon. SOEREN KIERKEGAARD (1813-1855) et la Norvège. *Revue germanique*, 18, 209-14, 1927. ISIS

Voir sur KIERKEGAARD, *Isis*, 6 168.

Pitollet, Camille. LIBRI, voleur de livres et professeur en Sorbonne, d'après son dossier ministériel inédit. *Revue des bibliothèques*, 37e année, 152-170, 1927. ISIS

Il est uniquement question des démêlés de LIBRI avec l'administration au sujet des congés qu'il s'octroyait. L. G.

Rjazanov, D. (*editor*). MARX-ENGELS Gesamtausgabe, im Auftrage des Marx-Engels-Instituts, Moskau. Erste Abteilung, Band I., erster Halbband. LXXXXIV + 628 p. Frankfurt a. M., *Marx-Engels-Archiv.*, 1927. ISIS

Reviewed by HENRI RAYMOND MUSSEY, *American Historical Review*, 33, 689-90, 1928.

Sée, Henri. Remarques sur la philosophie de l'histoire de HEGEL. *Revue d'histoire de la philosophie*, 1, 321-34, 1927. ISIS

XIXth Century (second half)

A. — *Mathematics.*

Archibald, Raymond Clare. BENJAMIN PEIRCE's linear associative algebra and C. S. PEIRCE. *American Mathematical Monthly*, 34, 525-529, 1927. ISIS

Haton de la Goupillière, Julien. Funérailles, le jeudi 13 janvier 1927. Discours de MAURICE D'OCAGNE, membre de l'Académie des sciences. 4 p. Académie des Sciences, Paris. ISIS

Weierstrass, Karl. Vorlesungen über Varationsrechnung. Bearbeitet von RUDOLF ROTHE. (Mathematische Werke von KARL WEIERSTRASS herausgeg. unter Mitwirkung einer von der Preuss. Akad. der Wiss. eingesetzten Kommission, Bd. 7) VIII + 324 p. Leipzig, Akademische Verlagsgesellschaft, 1927. ISIS

Reviewed by C. CARATHÉODORY, *Deutsche Literaturzeitung*, 57-58, 1928.

B. — *Physical sciences and technology.*

Armstrong, Henry E. MARCELIN BERTHELOT. *Nature*, 120, 659-663, portrait, 1927. ISIS

The English original of an appreciation contributed to *Chimie et Industrie* in connexion with the centenary celebrations of MARCELIN BERTHELOT.

Ashdown, Avery A. MARCELLIN BERTHELOT. *Journal of Chemical Education*, 4, 1217-1232 (October 1927). ISIS

Biography with bibliographical note on earlier biographical articles. T. L. D.

Berthelot, Marcelin (1827-1927). Essays by D. KONOVALOV, S. VUKOLOV, I. KABLUKOV, B. MENSCHUTKIN (in Russian). 156 p., 1 portr. Academy of Sciences, Leningrad, 1927. ISIS

Blake, G. G. History of radio telegraphy and telephony. Illustrated by the author. XIX + 425 p. London, CHAPMAN and HALL, 1926. ISIS

Reviewed by E. E. F. D'ALBE, *Nature*, 120, 868, 1927.

Cannizzaro, Stanislao (1826-1910). Scritti vari e lettere inedite nel centenario della nascita. (Associazione italiana di chimica generale ed applicata). VII + 486 p., 5 tavole fuori testo. Rome, Tip. Leonardo da Vinci, 1926 (L. 150) ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 372-374, 1927.

Coissac, G. Michel. Histoire du cinématographe, Préface de J.-L. BRETON. XVI + 604 p., 136 fig. Paris, GAUTHIER-VILLARS, 1925. ISIS

Reviewed by L. GUINET, *Isis*, 9, 125-127, 1927.

Estreicher, Tadeusz. CHARLES OLSZEWSKI et la liquéfaction des gaz. Publié en l'honneur de la huitième Conférence Internationale de la chimie pure et appliquée 23 p. Cracovie, Édition du Comité d'Organisation, 1927. ISIS

Freeth, F. A. H. KAMERLINGH ONNES, 1853-1926. Smithsonian Report for 1926, 533-535, Washington, 1927. ISIS

Reprinted from *Nature*, 117, March 6, 1926.

Gheury de Bray, M. E. J. The velocity of light .*Nature*, 120, 602-604, 1927. ISIS

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C. — *Natural sciences.*

Barreiro, P. Agustín Jesús (*editor*). Diario de la expedición al Pacífico llevada á cabo por una Comisión de naturalistas españoles, durante

los años 1862-1865, escrito por D. MARCOS JIMÉNEZ DE LA ESPADA, miembro que fué de la misma. *Boletin de la Real Sociedad Geografica*, 67, 261-304, 1927 (to be continued). ISIS

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Les géologues n'ont pas été aussi bien partagés que les mathématiciens et les physiciens; jusqu'ici il n'y en avait qu'un dont les œuvres avaient été réunies. — LEOPOLD VON BUCH. Nous saluons avec d'autant plus de plaisir la publication des œuvres de MARCEL BERTRAND, que celle-ci a été confiée à EMM. DE MARGERIE. Nous pouvons être sûrs qu'elle sera bien faite. Il y aura en tout trois volumes, contenant 163 articles ou mémoires. « Pour le classement de ce volumineux dossier, il a semblé que, tout en respectant strictement l'ordre chronologique, il y avait avantage à grouper sous autant de chefs distincts les travaux se rapportant à une même région ou à une même série de questions. Nous avons ainsi obtenu sept parties, consacrées respectivement au Jura (1), à la Provence (2), aux Alpes Françaises et Suisses (3), au Nord de la France et aux bassins houillers français (4), à des régions diverses (5), aux problèmes d'ordre général ou théorique (6), enfin aux Notices nécrologiques, Allocutions et Rapports (7). » Ceci représentera l'œuvre complète de BERTRAND, sauf les feuilles de la Carte géologique détaillée de la France, et deux longs ouvrages publiés dans les Mémoires de l'Académie des Sciences (1889, 1908). Les cartes géologiques et coupes en couleurs incluses dans la nouvelle édition ont été préparées avec beaucoup de soin. Le premier volume contient la notice rédigée par BERTRAND lors de sa présentation à l'Académie en 1894, et les deux premières parties. Ce beau monument contribuera à immortaliser la mémoire du grand maitre de la tectonique française (*Isis*, 6, 96). Espérons qu'il sera rapidement complété, et remercions l'éditeur consciencieux et les amis dévoués qui l'ont rendu possible. G. S.

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D. — *Medical sciences.*

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«Die schöne Menschlichkeit,die diese Dokumente der Gelehrtenfreundschaft atmen, bestimmten die Herausgeberin in erster Linie, sie der Oeffentlichkeit zu vermitteln. Ihr grosser Wert als Quellenmaterial zur Kenntnis der geschichtlichen Entwicklung der Medizin im 19. Jahrhundert, zu deren objektiver Würdigung nunmehr die Zeit gekommen ist, veranlasste sie auf Anregung SUDHOFF's zu ihrer Bearbeitung, zumal in Rede und Gegenrede manches Problem eine neue Beleuchtung gewinnt, und wir zwar an Briefen von gelehrten Aerzten und Naturforschern aus dem 19. Jahrhundert vierlerlei besitzen, aber an Briefwechseln bisher nicht reich sind. So hoffte sie zwei Aufgaben gerecht zu werden, dem allgemein menschlichen Interesse eines weiteren Leserkreises und dem Fachmann zu dienen, für den sich ein gutes Stück der Physiologie des 19. Jahrhunderts in zahlreichen Einzelheiten aufrollt.»

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ANDREW TAYLOR STILL was born near Jonesboro, Virginia, in 1828; he died in 1917. « Dr. STILL always considered June 22, 1874, as the birthday of osteopathy. It was on that day that all the different lines of investigation and of thinking, which he had been following for so long, converged and he saw clearly the truths which he was to champion from that day forth with his very life. »

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Monteiro, Arlindo Camillo. Un sabio português, o professor VIRGÍLIO MACHADO. *Archeion, Arch. di storia d. Scienza*, 8, 344-50, 1927. ISIS

VIRGILIO MACHADO (Queluz, 1859 - Lisboa, 1927), médecin, physiologiste, physicien, chimiste, et historien de la médecine; Sciência antiga vista à luz da moderna sciência (1885); Quadros históricos da sciência (1917-23); História de arte electroterapeutica (1917); etc. cours d'histoire des sciences à l'Instituto Mainense, dont il enrichit la bibliothèque. A succombé à trente ans de pratique radiologique. MACHADO était member fondateur de la H. S. S.
L. G.

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E. — *Alia.*

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P. MOUY, à qui on doit une étude sur « l'idée de progrès dans la philosophie de RENOUVIER, (*Thèse* Paris, 208., J. VRIN, 1927), vient de publier le cours professé à la Sorbonne par HAMELIN en 1906-7, et qui était tout entier écrit de la main de son auteur. MOUY s'est contenté d'y ajouter quelques notes bibliographiques et un index. Voir aussi sur RENOUVIER l'étude de GASTON MILHAUD, (*Isis*, 10, 210) et celle de LOUIS FOUCHER (*Isis*, 10, 196). L. G.

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XXth Century.

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B. — *Physical sciences and technology.*

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Reviewed by P. J. RICHARD, *Revue générale des sciences*, 39, 24, 1928.

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The same number of *Medical Life*, October 1927, contains various other articles on radiology, and its medical applications by HENRY SCHMITZ, HARRY H. BOWING, HERMAN GOODMAN, GEORGE PANEBAKER. G. S.

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Sarton, George. MOSELEY. The numbering of the elements. *Isis*, 9, 96-111, 1927. ISIS

Biography of HENRY GWYN JEFFREYS MOSELEY (1887-1915), with portrait and bibliography. G. S.

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C. — *Natural sciences.*

Amundsen, Roald. My life as an explorer. 282 p., front., map and facsimiles. Garden City, N. Y., DOUBLEDAY, PAGE, 1927. ISIS

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Owing to the extraordinaily comprehensive nature of the researches carried out by the DE FILIPPI expedition and to the success which attended their completion, this expedition may be regarded as a genuine landmark in the history of modern scientific exploration. The published results will be presented in thirteen magnificently printed and illustrated volumes. The volumes yet to appear will bear the following titles : Series I : Vol. II, Geofisica : gravimetria e magnetismo; Vol. III, Geofisica; meteorologia. Series II : Vol. I, Storia dell'esplorazione. Itinerari e ricerche; Vol. II, La serie dei terreni; Vol. IV, Le condizioni fisiche attuali; Vol. V., I fossili del Paleozoico; Vol. VI, I fossili del Mesozoico e del Terziario; Vol. VII, Le rocce; Vol. X, Raccolte di piante e di animali. Indici analitici. DE FILIPPI gives a popular narrative of the expedition in his Storia della spedizione scientifica italiana nel Himàlaia, Caracorùm e Turchestàn Cinese (1913-1914) con capitoli aggiuntivi di GIOTTO DAINELLI et J. A. SPRANGER. XIII + 541 p., col. front., illus., plates, maps (part fold. in pocket), plans, index, Bologna, N. ZANICHELLI, 1924. J. K. W.

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A broad review of geographical progress throughout the world. Stress is laid upon the stimulus given by the World War to exploration; cartography, the dissemination of regional knowledge, and, particularly in Germany, to the intensive cultivation of economic and political geography. J. K.W.

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D. — *Medical sciences.*

Bassler, Anthony. A chapter of American gastroenterology. My experience with the gastroenterology section of the American Medical Association, and a forecast into the future of the specialty. *Medical Life*, 34, 654-662, 1927. ISIS

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E. — *Alia.*

Bulic, Franciscus. Strena Buliciana. Commentationes gratulatoriae FRANCISCO BULIC ob XV vitae lustra feliciter peracta oblatae a discipulis et amicis, XI + 735 p. Zagrebiae, ASPALATHI, 1924. ISIS

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Voir *Isis*, 6, 52-56.

PART II.

HISTORICAL CLASSIFICATION.

Including only the items which could not be included in Part I — the fundamental (centurial) classification. Hence a student of Muslim science, for example, should not peruse simply the notes collected below under the heading « Islam », he should examine as well those included above under the headings VIIth century, VIII century, etc.

CONTENTS :

I. — *Antiquity* : 1. Antiquity (generalities); 2. Egypt; 3. Babylonia and Assyria; 4. Greece; 5. Rome.

II. — *Middle Ages* : 6. Middle Ages (generalities); 7. Byzantium.

III. — *Oriental Science and Civilization* : 8. Asia (generalities; Western Asia; Central Asia; Eastern Asia); 9. India; 10. China; 11. Japan; 12. Israel; 13. Iran; 14. Islam.

I. ANTIQUITY

1. — ANTIQUITY (*generalities*).

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Reviewed by VICTOR CHAPOT, *Journal des Savants*, 23-31, 1928.

Evans, Sir Arthur. Essays in Aegean archaeology. Presented to Sir ARTHUR EVANS in honour of his 75th birthday. Edited by STANLEY CASSON. IX + 142 p. Oxford, Clarendon Press, 1927.

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HENNIG places the Lestrygons in Africa and the Cimmerians in Cornwall. J. K. W.

Kammerer, A. Essai sur l'histoire antique d'Abyssinie. Le royaume d'Aksum et ses voisins d'Arabie et de Meroe. 198 p., avec 45 pl. hors texte et 4 cartes. Paris, GEUTHNER, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 449-50, 1927.

Meinecke, Bruno. Consumption (tuberculosis) in classical antiquity. *Annals of Medical History*, 9, 389-402, 1927. ISIS

Niederle, Luboi. Manuel de l'antiquité slave. t. II. La civilisation. (Collection de manuels publiée par l'Institut d'Études slaves, 1). 360 p., 144 fig., 3 pl. Paris, CHAMPION, 1926. ISIS

Reviewed by MARCEL BLOCH, *Revue de Synthèse historique*, 44, 168-9, 1927.

O'Brien-Moore, Ainsworth. Madness in ancient literature. 228 p. Weimar, WAGNER, 1924. ISIS

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Reviewed in *Nature*, 121, 375-6, 1928.

Schiaparelli, Giovanni. Scritti sulla storia della astronomia antica. Parte 2a. Scritti inediti. T. III, XVI + 340 p., 1 ritr., fig., N. ZANICHELLI, Bologna, 1927. ISIS

Avec ce volume se ferme le monument élevé par LUIGI GABBA et ATTILIO SCHIAPARELLI à la mémoire de GIOVANNI SCHIAPARELLI (*Isis*, 8, 503-6; 9, 544). Voici la nomenclature des notes qu'il renferme : Sul modo di narrare la storia dell'astronomia (pp. IX-X) ; Cenno autobiografico di G. SCHIAPARELLI (XV-XVI) ; Principio di una storia delle matematiche (7-15) ; (dès 1855, SCHIAPARELLI avait formé le projet d'écrire une histoire des mathématiques, dont nous avons ici le programme et l'introduction); Principio di una storia dell'astronomia antica (23-61); Studi sul calendario degli antichi Egiziani (67-105); Sulla relazione del calendario degli antichi Egiziani col fenomeno della precessione (109-119); Osservazioni ed effemeridi babilonese sui fenomeni del pianete Venere scoperte fra le rovine di Ninive ed oggi conservate nel Museo britannico (125-233); Sull'origine dell'era di Nabonassar (237-239);

Il calendario cappadoce (243-56); Studi su alcuni punti dell'astronomia antica in relazione col fenomene della precessione (261-77); Studi sopra IPPARCO, frammenti (281-6); Di un'antica ipotesi eliodinamica sul movimento dei pianete, frammenti (289-98); La settimane lunare dei Peruviani (303-4); Cenno sulla nautica astronomica dei Fenici (306); Origine delle nundinae (311-2); Sopra il Poeticon astronomicon d'Igino e analoghi scritti derivati da ERATOSTENE (315-21).

Certains de ces fragments devaient vraisemblablement s'incorporer à l'histoire de l'astronomie ancienne (jusqu'à la fin du XV^e^ s.), dont nous n'avons que le programme général, la préface et trois chapitres sur les origines et l'astronomie primitive, écrits vers 1901. Son histoire de l'astronomie « dev'esser leggibile, come quella di BAILLY... Deve rendersi interessante con acconcia varietà di materia, saper intercalare l'aneddoto e le notizie biografiche, non sprofondarsi in recerche teoriche fuor di proposito (che è il più grosso difetto di DELAMBRE), ma neppure contentarsi di schizzi superficiali, come fa troppo spesso BAILLY » (p. x). — Les fragments groupés comme Études sur le calendrier des anciens Égyptiens, écrits en 1871, devaient faire partie d'une histoire de l'astronomie chez les Égyptiens. — Le long mémoire sur les observations et les éphémérides babyloniennes date de 1905 ou 1906; il constitue essentiellement une traduction, un commentaire et une étude critique de la tablette cunéiforme K. 160 du British Museum. Et si SCHIAPARELLI ne l'a pas publiée, c'est vraisemblablement, selon GABBA, qu'il eut connaissance, après sa rédaction, d'une autre tablette cunéiforme dont le contenu était étroitement connexe à celui de la tablette sur laquelle était fondé tout son travail; tout était à refaire, et le temps a manqué. — Le travail sur la précession des équinoxes, antérieur à 1874, préparait le mémoire sur les sphères homocentriques d'EUDOXE, de CALIPPE et d'ARISTOTE. — Les fragments sur HIPPARQUE, notes jetées sur le papier de 1891 à 1908 devaient servir à une étude complète, dont nous avons le programme, de l'œuvre de cet astronome. — Les autres fragments sont moins importants.

Cette publication des inédits de SCHIAPARELLI est intéressante surtout au point de vue psychologique ; elle nous fait pénétrer dans l'élaboration même de son œuvre; nous sommes au milieu de ses projets; nous sentons mieux qu'il ne livrait à l'impression que des travaux longuement élaborés, mûrement réfléchis. Si la connaissance de l'astronomie ancienne, en soi, n'en tire point profit, la personnalité de GIOVANNI SCHIAPARELLI, dont un beau portrait orne le volume, s'en trouve grandie. L. G.

Tafrali, O. (Professeur à l'université de Jassy). La cité pontique de Dionysopolis. Kali-Acra, Cavarna, Téké et Ecréné. Exploration archéologique de la côte de la mer Noire entre les caps Kali-Acra et Ecréné faite en 1920. Recherches d'histoire. 80 p., 16 pl. Paris, GEUTHNER, 1927 (frs. 40). ISIS

Tannery, Paul (1843-1904). Mémoires scientifiques. Publiés par J. L. HEIBERG. Volume VII. Philosophie ancienne, 1880-1904. Préface de FEDERIGO ENRIQUES. XXIII + 380 p., 3 pl. Toulouse, EDOUARD PRIVAT, 1925. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 127-130, 1927.

Turayev, Boris Aleksandrovich (1868-1920). Russian investigations on the classical East published until 1917. Publications of the commission for the History of Sciences, no. 3, 19 p., portrait. Leningrad, Academy of Sciences, 1927 (in Russian). ISIS

2. — EGYPT.

Bevan, Edwyn. A history of Egypt under the Ptolemaic dynasty. XXI + 409 p. London, METHUEN, 1928. ISIS

Blackman, Winifred S. The Fellahin of Upper Egypt : their religious, social, and industrial life to-day, with special reference to survivals from ancient times. Foreword by R. R. MARETT. With many illustration from photographs taken by the author. 331 p. London, HARRAP, 1927. ISIS

Bourdon, Claude. Anciens canaux, anciens sites et ports de Suez. (*Mémoires de la Société Royale de Géographie d'Egypte*, 7). XVI + 157 p., 7 pl., maps, Le Caire, Société Royale de Géographie d'Egypte, 1925. ISIS

The aim of the rulers of Egypt from ancient times into the middle ages was to maintain communication with the Red Sea by a canal leading from the Gulf of Suez to the Nile. The Arabs were the first to « express explicitly the idea of a direct canal » from the Mediterranean to the Gulf of Suez. Lieutenant BOURDON's volume is divided into three parts : 1) French translations of ancient, Arabic, and epigraphic texts; 2) discussion of the texts; 3) discussion of the region through which the canals have run and of the remains of ancient canals. The work is illustrated by large scale maps and plans. J. K. W.

Dawson, Warren R. Pygmies, dwarfs, and hunchbacks in ancient Egypt. *Annals of Medical History*, 9, 315-326, 53 fig., 1927. ISIS

Erman, Adolf. Eine ägyptische Quelle der Sprüche SALOMOS. 10 p., 2 pl. Berlin, Preuss. Akademie der Wissenschaften, 1924. ISIS

Lexa, François. La magie dans l'Égypte antique, de l'ancien Empire jusqu'à l'époque Copte. 3 vols. Paris, GEUTHNER, 1925. ISIS

Reviewed by LYNN THORNDIKE, *Isis*, 9, 450-2, 1927.

Lint, J. G. de. De bezwering in de geneeskunde van het oude Egypte. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 17-28, 1928. ISIS

Moret, Alexandre. The Nile and Egyptian civilization. XXIX + 497 p., 24 pl. 82 text ill., 3 maps. London, KEGAN PAUL, 1927 (issued 1928). ISIS

Petrie, Sir W. M. Flinders. Ancient weights and measures : illustrated by the Egyptian collection in University College, London. VI + 51 p., 54 pl. London, Department of Egyptology, University College, 1926. ISIS

Reviewed by W. H. MATTHEWS, *Nature*, 121, 311-314, 1928.

Porter, Bertha, and **Moss, Rosalind L. B.** Topographical bibliography of ancient Egyptian hieroglyphic texts, reliefs and paintings. Vol. 1 : The Theban necropolis. XVIII + 212 p. Oxford, Clarendon Press, 1928. ISIS

Steindorff, Georg. Aegypten und der Sudan. Handbuch für Reisende. 8. Aufl. CCII + 480 p., 21 maps; 85 plans, 56 fig. Leipzig, KARL BAEDEKER, 1928. ISIS

Reviewed by HEINRICH SCHÄFER, *Deutsche Literaturzeitung*, 676-9, 1928.

Wieleitner, Heinrich. War die Wissenschaft der alten Aegypter wirklich nur praktisch? *Isis*, 9, 11-28, 1927. ISIS

« Ich möchte nun im folgenden zu zeigen versuchen, dass die Frage des Titels dieser Abhandlung mit Nein zu beantworten ist. Damit stelle ich mich in einigen Gegensatz zu den meisten Aegyptologen, wenigstens zu allen europäischen, die sich mit der Frage überhaupt befasst haben. » . . . . « Die Geschichte der Wissenschaften muss eben letzten Endes doch von den Wissenschaftshistorikern beurteilt werden, nicht von den Philologen. Auch habe ich schon Helfer, die mir in meiner Ansicht vorangegangen sind, einen Aegyptologen (J. H. BREASTED) und einen Mathematikhistoriker (L. CH. KARPINSKI), der den Aegyptologen mit beeinflusste, beide in den Vereinigten Staaten. »

Wulff, Oskar; Volbach, Wolfgang Fritz. Spätantike und koptische Stoffe aus ägyptischen Grabfunden. XIII + 159 p., 135 pl. Berlin, E. WASMUTH, 1926. ISIS

Reviewed by R. BERLINER, *Deutsche Literaturzeitung*, 2107-2110, 1927.

3. — BABYLONIA AND ASSYRIA.

Ehelofl, Hans und **Lansberger, B.** Der altassyrische Kalendar. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 74, 216-219, 1920. ISIS

Hall, H. R. and **Woolley, C. Leonard.** Ur excavations. Vol. 1 : Al-'Ubaid : a report of the work carried out at Al-'Ubaid for the British Museum in 1919, and for the joint expedition (British Museum and the University of Pennsylvania) in 1922-23. With chapters by C. J. GADD and Sir ARTHUR KEITH. XII + 244 p., 78 pl. London,

Published for the two Museums by the Oxford University Press, 1927. ISIS

Hoppe, Edmund. Die Entstehung des Sexagesimalsystems und die Kreisleitung. *Arch. di storia d. sc.*, 8, 449-458, 1927. ISIS

« Die älteste Zeiteinheit bei den Sumerern war 1/6 Tag = *sussu*, begründet durch die Richtungsmessung beim Gnomon, und durch die Wahl des gleichseitigen Dreiecks zur Feststellung des Richtungsunterschiedes... Die Unterteilung wird nach zwei Richtungen vollzogen: erstens die Halbierung zu einen *kasbu* (1/12 Tag) und später zu einem halben *kasbu*; zweitens die Einteilung der Einheit in 10 Teile nach Anleitung des Dezimalsystems. Resultat : eine Stunde = 1/24 Tag und die Ebene = 60 Teile. Damit ist das Sexagesimalsystem « praeliterarisch » begründet. In der Schriftsprache folgt die systematische Ausprägung mit den Potenzen von 60, und ebenso den Potenzen von 1/60 ... Erst unter der Assyrerherrschaft erfolgt die weitere Einteilung des Tages durch Teilung der alten Einheit *sussu* in 60 Teile zu einem *us*, dementsprechend die Teilung des Gnomonebene in 360 Teile, und so die Kreisteilung in 360 Grad. »

Jean, Charles François. Sumer et Akkad; contribution â l'histoire de la civilisation dans la basse Mésopotamie. II + 165 p., 92 pl. Paris, GEUTHNER, 1923. ISIS

Reviewed by E. BURROWS, *Journal Royal Asiatic Society*, 321-322, 1926.

Langdon, Stephen. Babylonian penitential psalms, to which are added fragments of the epic of creation from Kish in the Weld Collection of the Ashmolean Museum. Excavated by the Oxford-Field Museum Expedition. (Oxford Editions of cuneiform texts, edited under the direction of S. LANGDON, 6). XVI + 106 p., 37 pl. Paris, GEUTHNER, 1927. ISIS

Reviewed by BRUNO MEISSNER, *Deutsche Literaturzeitung*, 363-4, 1928.

Musil, Alois. The Middle Euphrates : a topographical itinerary. XV + 426 p., 57 ills. in text; 2 maps in pocket. *American Geographical Society, Oriental Explorations and Studies* no. 3, New York, American Geographical Society, 1927. ISIS

See *Isis*, 10, 249. In the appendixes of this volume there is much material on the historical geography of Mesopotamia in ancient and medieval times based on an elaborate study of the writings of historians and geographers in comparison with the results of explorations in the field. J. K. W.

Schoch, Carl. Die Ur-Finsternis (eine Hypothese). 2 p. quarto. Berlin-Steglitz, 31 Dezember 1927. ISIS

To this privately printed publication was added a typewritten page giving the chronology of the Dynasty Ur III according to the author's astronomical computations. The dates quoted are astronomical, thus -2282 equals 2283 B. C. G. S.

Thureau-Dangin, François. Le syllabaire accadien. XII + 68 p. Paris, P. GEUTHNER, 1926. ISIS

Reviewed by BRUNO MEISSNER, *Deutsche Literaturzeitung*, 2000, 1927.

Virolleaud, Ch. Babylone. *Revue générale des sciences*, 38, 535-541, 1927. ISIS

4. — GREECE.

Bick, Edgar M. The cult of Asklepios. A critical study. *Annals of Medical History*, 9, 327-331, 1927. ISIS

Buck, Carl Darling. Introduction to the study of the Greek dialects. Grammar, selected inscriptions, glossary. Revised edition. XVIII + 348 p. Boston, GINN and Company, 1928. ($ 7.50) ISIS

We did not review the first edition of this work (1909) as it appeared before *Isis*'s birth. The new edition differs in many ways from the first. Indeed, the revision « has been effected by numerous plate corrections in the body of the work, the addition of a few new inscriptions of especial importance, and a completely rewritten and much augmented Appendix and Glossary. But few pages of Part I, the grammar, have escaped some change, while longer additions have been placed in the Appendix. » The purpose of the work is to give within a relatively small compass, that is, as briefly as is consistent with completeness and accuracy, a comparative study of Greek dialects, not only the few literary dialects but also the many others represented epigraphically. It is divided into two main parts almost equal, a grammar and a collection of inscriptions. Half the grammar naturally deals with phonology. The following dialects are represented : Ionic, Arcadian, Cyprian, Lesbian, Thessalian, Boeotian, Phocian, Locrian, Elean, Northwest Greek κοινή, Laconian, Heraclean, Argolic, Corinthian, Megarian, Rhodian, Coan, Theran, Cretan. Of course the average historian of science is but seldom obliged to consider inscriptions; it is amply sufficient for him to be familiar with the characteristics of the four literary dialects : Attic, Ionic, Aeolic, Doric, and of the κοινή; yet he may need occasionally to refer to this very useful compendium. The larger work of F. BECHTEL : Die griechischen Dialekte (3 vols., Berlin, 1921-24) is posterior to the first edition of the present work, but the author has taken full advantage of it in the preparation of this revised edition. This revision is completed by an elaborate glossary-index, a bibliography, charts illustrating the distribution of peculiarities and a dialectic map of Greece. A work which has already become a classic, in Europe as well as in America, needs no special praise. It sufficed to indicate the additional merits of the new edition, as I gladly did. G. S.

Enriques, Federigo. L'évolution des idées géométriques dans la pensée grecque : point, ligne, surface. Traduit sur la 3e édition italienne par MAURICE SOLOVINE. (Fasc. I des Questions relatives aux mathématiques élémentaires, réunies et coordonnées par F. ENRIQUES.) VIII + 48 p., Paris, GAUTHIER-VILLARS, 1927. ISIS

Esquisse écrite à l'usage des futurs professeurs, où l'auteur donne l'histoire des résultats et de l'évolution des idées géométriques chez les Grecs. La 3e édition italienne est de 1924. L. G.

Jacoby, Felix. Die Fragmente der griechischen Historiker, II. T 1. Zeitgeschichte, Lfg. 1. : S. 509-828; dazu Kommentar S. 341-542. Berlin, WIEDEMANN, 1927. ISIS

Reviewed by U. VON WILAMOWITZ- MOELLENDORFF, *Deutsche Litaraturzeitung*, 2596-2598, 1927.

Oder, Eugenius; Hoppe, Carolus. Corpus Hippiatricorum Graecorum. Vol 2. Hippiatrica Parisina, Cantabrigensia, Londinensia, Lugdunensia. Appendix. XXIX + 358 p. Leipzig, TEUBNER, 1927. ISIS

Reviewed by K. SUDHOFF, *Mitt. zur Geschichte der Medizin*, 27, 53-55, 1928

Séchan, Louis. Études sur la tragédie grecque dans ses rapports avec la céramique. VIII + 642 p. Paris, CHAMPION, 1926. ISIS

Reviewed by PAUL MAZON, *Journal des Savants*, 49-57, 1928.

Stephanides, Michael. *Φυσιογνωστικὴ μυθολογία* (Natural mythology). *Ἀνατύπωσις ἐκ τοῦ Ἡμερολογίου τῆς Μεγάλης Ἑλλάδος*, vol. 7, 331-37, 1928. Athens. ISIS

By natural mythology, the author means the myths which symbolize physical phaenomena or prehistoric traditions. A number of examples are quoted. G. S.

Sticker, Georg. Fieber und Entzündung bei den Hippokratikern. *Archiv für Geschichte der Medizin*, 20, 150-174, 1928. ISIS

5. — ROME.

Ashby, Thomas. The Roman Campagna in classical times. 256 p., 48 fig. London, E. BENN, 1927. ISIS

Reviewed by CH. HUELSEN, *Deutsche Literaturzeitung*, 2161-2163, 1927.

Beloch, Karl-Julius. Römische Geschichte bis zum Beginn der Pünischen Kriege. Berlin, W. DE GRUYTER, 1926. ISIS

Reviewed by A. PIGANIOL, *Journal des Savants*, 104-113, 1928.

Collinet, Paul. Histoire de l'École de droit de Beyrouth. (*Études historiques sur le droit de Justinien*, t. 2). 333 p. Paris, Société du Recueil Sirey, 1925. ISIS

Reviewed by R. MOUTERDE, S. J., *Byzantion*, 2, 510-513, 1925.

Duff, J. Wight. A literary history of Rome in the silver age. From

TIBERIUS to HADRIAN. XIV + 674 p. London, FISHER UNWIN, 1927. ISIS

Feldhaus, F. M. Über hohle römische Roststäbe. *Geschichtsblätter für Technik, Industrie und Gewerbe*, 11, 259-261, 2 fig., 1927. ISIS

Hauptmann, Carl. Grundsätze der römischen Erdvermessung als Hilfswissenschaft der Archäologie dargelegt und an Beispielen erläutert. (Letzter Teil von « Die römischen geodäten am Rhein »). 2 + 30 p. maps, plates, plans, diagrs., illus. Bonn, Rhenania Verlag, 1925. ISIS

Hohl, Ernestus. Scriptores historiae Augustae. (*Bibliotheca scriptorum Graecorum et Romanorum Teubneriana.*) 2 vols. XV + 305 p.; 304 p. Leipzig, TEUBNER, 1927. ISIS

Reviewed by J. HASEBROEK, *Deutsche Literaturzeitung*, 563-5, 1928.

Howald, Ernest and **Sigerist, Henry E.** ANTONII MUSAE De herba vettonica liber. PSEUDO-APULEI Herbarius. Anonymi de taxone liber. SEXTI PLACITI Liber medicinae ex animalibus etc. XXIV + 347 p., 2 pl. Leipzig, TEUBNER, 1927. ISIS

Reviewed by JOH. MEWALDT, *Deutsche Literaturzeitung*, 222-224, 1928; and by KARL SUDHOFF in *Mitt. zur Geschichte der Medizin*, 26, 323, 1927.

Mattingly, Harold. Roman coins from the earliest times to the fall of the Western Empire. (*Methuen's Handbooks of Archaeology*). XX + 300 p., 64 pl. London, METHUEN, 1928. ISIS

Piganiol, André. La conquête romaine. (Peuples et civilisations, histoire générale, edited by LOUIS HALPHEN and PHILIPPE SAGNAC). 520 p. Paris, ALCAN, 1927. ISIS

Reviewed by TENNEY FRANK, *American Historical Review*, 33, 372-3, 1928.

Randall-MacIver, David. The Etruscans. V + 152 p., 11 pl. Oxford, Clarendon Press, 1927. ISIS

Randall-MacIver, David. The iron age in Italy : a study of those aspects of the early civilization wich are neither Villanovan nor Etruscan. XV + 243 p., 48 pl. Oxford, Clarendon Press, 1927. ISIS

Rostovtsev, Mikhail Ivanovich. A history of the ancient world. Vol. 2, Rome. Translated from the Russian by J. D. DUFF. XIV + 387 p. London, Oxford University Press, 1927. ISIS

Reviewed by CLIFFORD H. MOORE, *American Historical Review*, 33, 369-71, 1928.

Sinaïski, Vasili. Les XII tables au point de vue de la chronologie

de Rome et de son calendrier. 146 p. *Acta universitatis Latviensis*, XV, Riga, 1926. ISIS

Discussion de la chronologie de la fondation de Rome, de ses premiers rois, et de la création des XII Tables. L. G.

Sinaiski, Vasili. Das zehnmonatliche Jahr in der römischen Historiographie. *Epistolae et logistorici*, No 6-7, 1-11, Riga, 1927. ISIS

II. MIDDLE AGES.

6. — MIDDLE AGES (*generalities*).

Corner, George W. Anatomical texts of the earlier Middle Ages. A study in the transmission of culture with a revised Latin text of Anatomia Cophonis and translations of four texts. 112 p., 3 pl. Washington, Published by the Carnegie Institution, 1927. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 452-56, 1927.

Coulton, G. G. (*editor*). Life in the Middle Ages. Vol. 1 : Religion, folk-lore and superstition. (*The Cambridge Anthologies*). XV + 246 p. Cambridge, University Press, 1928. ISIS

Coulton, G. G. and **Thurston, Rev. Herbert.** Roman Catholic and Anglican accuracy. A public correspondence. 31 p. London, SIMPKIN, MARSHALL, 1927. ISIS

Degering, Hermann. Mittelalterliche Handschriften. Paläographische, kunsthistorische, literarische und bibliotheksgeschichtliche Untersuchungen. Festgabe zum 60. Geburtstage von HERMANN DEGERING. VII + 327 p., 17 pl., portrait. Leipzig, KARL W. HIERSEMANN, 1926.

Of the many memoirs contained in this splendid Festschrift, one by JULIUS SCHUSTER : *Secreta salernitana* is of special interest to our readers ; it is analyzed above in the section devoted to the first half of the fourteenth century. The Festschrift was edited by ALOIS BÖMER and JOACHIM KIRSCHNER ; it contains 17 plates the first of which is a portrait of DEGERING. G. S.

Des Marez, G. Le problème de la colonisation franque et du régime agraire dans la Basse-Belgique. 193 p., cartes, plans et figures. (Extrait des *Mémoires publiés par la Classe des Lettres de l'Académie Royale de Belgique* ; Deuxième série, t. 9) Bruxelles, M. HAYEZ, 1926. ISIS

Reviewed by FRANÇOIS L. GANSHOF, *Journal des Savants*, 113-123, 1928 ; and by C. W. DAVID, *American Historical Review*, 33, 380-382, 1928.

Döring-Hirsch, E. Tod und Jenseits im Spätmittelalter zugleich ein Beitrag zur Kulturgeschichte des deutschen Bürgertums. (*Stud. zur*

Geschichte der Wirtsch. und Geisteskultur hrsg. von R. HÄPKE, Bd. 2) XV + 115 p. Berlin, K. CURTIUS, 1927. ISIS

Reviewed by PHILIPP STRAUCH, *Deutsche Literaturzeitung*, 1563-1566, 1927.

Drecker, Joseph. Ueber Zeitbestimmung nach Sonnenuhren im Mittelâlter. *Archiv für Geschichte der Mathematik*, 10, 420-426, 5 fig., 1928. ISIS

Lippmann, E. O. von. Petroleum im frühen Mittelalter. *Archivio di storia d. scienza*, 8, 40-41, 1927. ISIS

Le pétrole était connu en petites quantités en Perse au VII^e^ siècle; au X^e^, les gisements voisins de Baku sont exploités, et le pétrole exporté en Egypte. Les fameux incendies du Caire de 1077 et 1169 sont, en grande partie, des incendies par le pétrole. L'école de Salerne conseillait les bains de Puteoli (Puzzoles). L. G.

Mâle, Emile. Art et artistes du moyen âge. 328 p., 8 pl. Paris, COLIN, 1927. ISIS

Reviewed by HENRY LEMONNIER, *Journal des Savants*, 97-103, 1928.

Pirenne, Henri. Les villes du moyen âge, essai d'histoire économique et sociale. 203 p. Bruxelles, MAURICE LAMERTIN, 1927. ISIS

Reviewed by A. COVILLE, *Journal des Savants*, 15-22, 72-80, 1928.

Prado, Germán (O. S. B.) Mozarabic melodies. *Speculum*, 3, 218-238, 2 pl., many musical illustrations, 1928. ISIS

Ribera y Tarragó, Julián. Historia de la música árabe medieval y su influencia en la Española. (*Colección de manuales Hispania*). 355 p. Madrid, Editorial Voluntad, 1927. ISIS

This volume explains the conclusions of Don JULIÁN's deep studies; it is beautifully written in a lighter vein and without the critical notes which would discourage the educated reader who is not a scholar. As for the scholar, he will find all the information he needs in Don JULIAN's earlier works, La música de las Cantigas (Madrid, 1922) and La música andaluza medieval (3 parts, Madrid 1923-25; see below). As is well said by EMILIO GRACIA GOMEZ in his preface : « La música popular medieval, española y europea, fuente de la que aún corre en boca de les gentes del pueblo; la *musica ficta* que los cantollanistas juzgaban invención del diablo, delatando con su repugnancia el origen musulmán de las fascinadoras melodías, es, pues, la misma que excuchaban, fuera de sí por la emoción placentera, a través del velo o *citara* que ocultaba a los músicos, los califas de las *Mil y una noches*. Y la misma que los árabes tomaron de Bizancio y Persia, como éstos de Grecia y Roma. La cadena transmisora se ha restablecido. Así, mientras la conciencia cientÍfica se satisface con la única explicación posible, el gusto por la historia pintoresca se complace en ver al moro y al cristiano — como en la viñeta del códice alfonsí que exorna el frontispicio de este libro — tañendo acordes, en idénticas vihuelas, las mismas antiquísimas tocatas. » This volume ought

to be translated into English. The DUKE OF ALBA AND BERWICK, thanks to whose generous initiative the work of Don MIGUEL ASÍN on DANTE and the Divine Comedy, was made available to English readers, would increase our debt to him considerably if he would encourage the translation of Don JULIÁN's volume. Both works (this one and ASÍN's) complete each other. Both explain the influence of Islam upon medieval civilization through Spanish channels; both reveal the vitality of modern Spanish scholarship.

G. S.

Ribera y Tarragó, Julián. La música andaluza medieval en las canciones de trovadores, troveros y minnesinger. Fascículo 1º. 130 Canciones transcritas (12 armonizadas) de el Cancionero del Arsenal, el de Saint Germain des Prés y el del no. 844 de la Biblioteca Nacional de Paris. 32 + 74 p. Madrid, *Revista de Archivos*, 1923. Fascículo 2º. 136 canciones transcritas (12 armonizadas) del manuscrito núm. 846 de la Biblioteca Nacional de Paris. 40 + 62 p. Madrid, ESTANISLAO MAESTRE, 1924. Fascículo 3º. 90 canciones de los minnesinger del códice de Jena (25 armonizadas). 64 + 68 p. Madrid, ESTANISLAO MAESTRE, 1925. ISIS

The great Spanish Arabist, Don JULIÁN RIBERA, is already well known to students of music by the monumental work, La Música de las Cantigas, published in 1922 by the Real Academia Ezpañola. He now considerably increases their debt to him by this rich collection of melodies which the trouvères and troubadours borrowed in Andalusia. Whence did these Andalusian melodies come ? They came undoubtedly from Islam. Don JULIÁN's work completes and corroborates the independent investigations of HENRY GEORGE FARMER (1925; *Isis* 8, 508-511; 9, 189, 500). The first three parts of Don JULIÁN's work contain 356 canciones, 51 of which are harmonized. They are elaborately discussed and compared in the introductions and briefer notes deal with the particularities of each. The melodies here reproduced are derived from various Mss. : Bibliothèque Nationale, Paris, nos. 844 and 846; Chansonnier de l'Arsenal; Chansonnier de Saint Germain des Prés; and the Jena Ms. of Minnesinger. I am not yet able to give our readers an analysis and discussion of this very important work, but I wish to indicate some of the topics dealt with in the introductory chapters : History of the so-called *musica falsa* or *ficta* in Andalusia and its spread throughout Europe. Interpretation of troubadour music in this light .Comparison between the Cantigas and the troubadour melodies. How is their rhythm determined ? The method of interpretation is more fully discussed in part 3, p. 10-21. Andalusian characteristics in the text and music of the Minnelieder. As I am unqualified to discuss this work, I will gladly give my copy to any competent scholar willing to prepare a review and discussion of it for *Isis* and thus more worthy than I to own it.

G. S.

Salzman, Louis Francis. English life in the Middle Ages. v + 287 p., ill. London, Oxford University Press, 1926. ISIS

Reviewed by K. G. T. WEBSTER, *Speculum*, 2, 485, 1927.

Saxl, Fritz. Verzeichnis astrologischer und mythologischer illustrierter

Handschriften des lateinischen Mittelalters. II. Die Handschriften der National-Bibliothek in Wien. (*Sitzungsberichte der Heidelberger Akademie der Wissenschaften, Philosophisch-historische Klasse*, 1925-26, 2). 254 p., 17 pl. Heidelberg, CARL WINTER, 1927. (RM. 18). ISIS

The first part of this elaborate investigation inspired by the much lamented FRANZ BOLL (1867-1924; see *Isis*, 9, 476) dealt with the Roman libraries and appeared in 1915 (*Isis*, 5, 277). The present volume is devoted to the treasures of the National Library of Austria; it is richly illustrated. It is divided as follows : Einleitung. 1. Die Aratea; 2. Die Scotus-Gruppe; 3. Die orientalisierten Sternbilder-Darstellungen; DÜRERS Himmelskarte; 4. Mikrokosmos-Bilder; 5. Astrologische Genrebilder des späten Mittelalters; Der Salone in Padua. Codices Vindobonenses. Tabellen. Indices. A total of 28 Mss. have been investigated and compared, 14 of the XVth century, 9 of the XIVth, and 5 of the IXth to XIIth century. The following remarks (on p. 7) will help the reader to appreciate the kind of material to be found in this volume. « Unsere Traktate und deren Miniaturen lassen sich je nach ihrem Verhältnis zu der griechisch-römischen und hellenistisch-orientalischen Wissenschaft in folgende vier Gruppen gliedern : Die erste Gruppe bilden die Handschriften, die das in der römischen Antike in den sog. Aratea-Handschriften aufgezeichnete Allgemeingut an Wissen vom gestirnten Himmel dem europäischen Mittelalter überliefern. Die zweite Gruppe umfasst die Scotus-Handschriften, welche Elemente der Aratea, also der autochthoneuropäischen Bildung, mit solchen Elementen vermischen, die aus der hellenistisch-orientalischen Tradition stammen. Die dritte Gruppe wird von den Handschriften gebildet, die — neben orientalischen Lehngut — im wesentlichen nur jenen antiken Wissensstoff kodifiziert enthalten, der den nachantiken Kulturen des Westens erst auf dem Wege über den Orient vermittelt wurde. Zu dieser Gruppe gehören die Abschriften der Sterntabellen des ALFONSO, die SÛFÎ-Handschrift usw. Zu einer vierten Gruppe endlich gehören die BONATTI-Handschrift, die mit kleinen Genrebildern geschmückt ist, welche die Fragen an das Schicksal verbildlichen, die Handschrift mit den Genrebildern der Planetenkinder und die KYESER-Handschriften mit den im 15. Jahrhundert neumodischen Bildern der Planeten zu Pferde. Die Handschriften dieser Gruppe sind dadurch gekennzeichnet, dass in ihren Darstellungen keine Bildtradition von der Antike hier nachwirkt, sondern dass ihre Bilder neue Erfindungen des spätmittelalterlichen Geistes darstellen. » G. S.

Studer, Paul, and **Evans, Joan.** Anglo-Norman lapidaries. XX + 404 p. Paris, CHAMPION, 1924. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 123-4, 1927.

Sudhoff, Karl. Anatomietexte in den lateinischen Galenhandschriften des XIII. und XIV. Jahrhunderts, und in den Frühdrucken. *Janus*, 31, 294-303, 1927. ISIS

Sudhoff, Karl. Harnglas und Harnglaskorb. Etwas aus dem A B C der medizinischen Realienkunde des Mittelalters. *Archiv für Geschichte der Medizin*, 17, 292-298, 2 pl., 1925. ISIS

Thorndike, Lynn. Sanitation, baths, and street-cleaning in the Middle Ages and Renaissance. *Speculum*, 3, 192-203, 1928. ISIS

... « No very positive position, then, would yet seem possible as to the sanitary condition and care of the streets in times past, and the Middle Ages in especial. What we need is less mud-slinging and more facts. If the foregoing discussion serves to check the former somewhat and to encourage the production of more of the latter, it will have achieved its purpose. »

Thorndike, Lynn. The survival of mediaeval intellectual interests into early modern times. *Speculum*, 2, 147-159, 1927. ISIS

This is a very stimulating article which will do a lot of good. It would have done more good still but for some overstatements. It is clear that anatomy and physiology did not begin with VESALIUS and HARVEY, but their activity was nevertheless of the most revolutionary nature. And ORESME's use of coordinates was hardly an anticipation of analytic geometry. In fact DESCARTES owed infinitely more to the Greek geometers than to ORESME or to any mediaeval mathematician. G. S.

Thurston, Herbert (S. J.) Some inexactitudes of Mr. G. G. COULTON : a sheaf of criticisms and rejoinders arising mainly out of Mr. COULTON's volume « The mediaeval village. » 86 p. (The Twelvepenny Series). London, SHEED and WARD, 1927. ISIS

Yeldham, Florence, A. Notation of fractions in the earlier middle-ages. *Archeion, Arch. di storia d. scienza*, 8, 313-29, 1927. ISIS

L'emploi de fractions à base 12 (ou multiples et sous-multiples de 12) est très ancien. On les trouve chez VOLUSIUS MAECIANUS (ca. 146 A.D.); BALBUS, au commencement du II^e^ S. de notre ère, les emploie. En Europe occidentale, leur introduction est postérieure : VICTOR D'AQUITAINE (ca. 457), BÈDE (673-735) ne se servent que des expressions employées par VOLUSIUS. Au milieu du X^e^ s., à l'époque d'ABBO DE FLEURY, vingt cinq fractions de cette nature sont employées. Aux XI^e^ et XII^e^ s., ces vingt cinq fractions sont étudiées longuement dans les travaux sur l'abaque. L'auteur reproduit quelques pages du *Ratio regularum abaci* (Ms XVII de St John's College, Oxford), datant de 1110. L. G.

7. — BYZANTIUM.

Andréadès, A. De la monnaie et de la puissance d'achat des métaux précieux dans l'Empire byzantin. *Byzantion*, 1, 75-115, 1924. ISIS

Diehl, Charles. Choses et gens de Byzance. (*Collection d'études d'histoire et d'archéologie*). III + 248 p. Paris, BOCCARD, 1926. ISIS

Reviewed by PERCY ERNST SCHRAMM, *Deutsche Literaturzeitung*, 2459-2464, 1927.

Fuchs, Friedrich. Die höheren Schulen von Konstantinopel im

Mittelalter. (*Byzantinisches Archiv*, Heft 8). VI + 79 p. Leipzig, TEUBNER, 1926. ISIS

Reviewed by LOUIS BRÉHIER, *Journal des Savants*, 132-4, 1928.

Gay, Jules. Notes sur l'hellénisme sicilien de l'occupation arabe à la conquête normande. *Byzantion*, 1, 215-228, 1924. ISIS

Iorga, Nicolae. Médaillons d'histoire littéraire byzantine. *Byzantion*, 2, 237-298, 1925. ISIS

Millet, Gabriel. Monuments de l'Athos. T. I. Les peintures. Album de 264 planches. (*Monuments de l'art byzantin publiés sous les auspices du Ministère de l'Instruction publique et des Beaux Arts*, 5). 74 p., 264 pl., Paris, LEROUX, 1927. ISIS

Reviewed by O. WULFF, *Deutsche Literaturzeitung*, 91-95, 1928.

Peeters, P. (S. J.) Sur la nécessité d'un Onomasticon de l'Orient byzantin. Mémoire présenté à la section byzantine du V^e^ Congrès International des sciences historiques, à Bruxelles, avril 1923. *Byzantion*, 1, 485-499, 1924. ISIS

Schlumberger, Gustave. Byzance et croisades. Pages médiévales. V + 367 p., 24 planches hors texte. Paris, PAUL GEUTHNER, 1927. (60 frs.) ISIS

Ces *scripta minora* du grand byzantiniste français GUSTAVE SCHLUMBERGER, à qui l'on a consacré récemment un admirable Festschrift (1924; *Isis*, 10, 228), méritent amplement la belle réédition que nous en donne le maitre éditeur PAUL GEUTHNER. D'ailleurs, il ne s'agit pas simplement d'une réimpression. Par exemple, cinq de ces études avaient paru dans la *Revue des Deux Mondes* (de 1902 à 1916), mais elles ont été considérablement augmentées pour la présente édition; l'une d'elles, le voyage dans les Abruzzes et les Pouilles (1914) est devenue au moins trois fois plus longue. Cette étude est l'une des plus intéressantes du recueil; elle contient des détails précis sur les châteaux de FRÉDERIC II : Lucera dei Pagani, où il entretenait une armée de Sarrasins, Castel del Monte, Firenzuola, où il mourut; sur les lieux qu'il aimait, par exemple, Foggia; sur ses ménageries, etc. Toutes ces études sont admirablement illustrées, ce qui n'avait pas été possible lorsqu'elles furent originalement publiées. Le seul défaut de ce livre à la fois érudit et charmant, c'est le manque d'un index. Il contient les études suivantes : 1. Une révolution de palais en l'an 1042 à Byzance; 2. Le tombeau d'une impératrice byzantine à Valence, en Espagne; 3. Un empereur de Byzance à Paris et à Londres; 4. Voyage dans les Abruzzes et les Pouilles (3-17 mai 1914); 5. Fin de la domination franque en Syrie. Prise de Saint-Jean-d'Acre, en l'an 1291, par l'armée du Soudan d'Égypte; 6. JEAN DE CHATEAUMORAND, un des principaux héros français des arrière-croisades en Orient à la fin du XIV^e^ siècle et à l'aurore du XV^e^; 7. Une prise de possession chrétienne de la ville de Jérusalem, en l'an 1229. La ville sainte et l'empereur FRÉDÉRIC II DE HOHENSTAUFEN. G. S.

Sôterios, Geôrgios A. Guide to the Byzantine Museum of Athens (in Greek). 142 p., 10 pl., 37 fig. Athena, MACRIS, 1924. ISIS

Reviewed by HENRI GRÉGOIRE, *Byzantion*, 2, 571-77, 1925.

Stephanides, Michael. *Μουσικὴ καὶ χρυσοποιία* (Music and chrysopoeia). *Ἐπετηρις τῆς ἑταιρείας τῶν Βυζαντινῶν σπουδῶν*, vol 4, 39-45, Athens, 1927. ISIS

Explaining the relations which the Byzantine chymeutes (alchemists) established between alchemical transmutations and musical syntheses. Their main source of inspiration was the Timaeos. G. S.

Uspenskij, Feodor. Notes sur l'histoire des études byzantines en Russie. Traduit sur le manuscrit russe par H. GRÉGOIRE. *Byzantion*, 2, 1-53, 1925. ISIS

III. ORIENTAL SCIENCE AND CIVILIZATION.

8. — ASIA (*generalities*).

Bouvat, Lucien. L'Empire mongol (Deuxième phase). (Histoire du monde, éditée par E. CAVAIGNAC, tome 8). 364 p. Paris, BOCCARD, 1927. ISIS

Reviewed by ALBERT HOWE LYBYER, *American Historical Review*, 33, 681-2, 1928.

Buxton, L. H. Dudley. The peoples of Asia. XIII + 271 p., ills., bibliog., indexes. (The History of Civilization Series). London, KEGAN PAUL, 1925. ISIS

Reviewed by C. W. BISHOP, *The Geographical Review*, 169-171, January 1928.

Howorth, Sir Henry Hoyle (1842-1923). History of the Mongols from the 9th to the 19th century. Part IV. Supplement and Indices. IV + 378 p. London, LONGMANS, GREEN, 1927. ISIS

Contents : 1. A general view of the geography, ethnography, and biology of Central Asia ; 2. The character, home life, and surroundings of the Mongols ; 3. The religion, ritual and magical practices of the Mongols ; Indices : to Vol. 1. The Mongols proper and the Kalmuks ; to vol. 2. The so-called Tartars ; to vol. 3, The Mongols of Persia. These indices appearing half a century later than the work itself, fill a gap which had been felt by many scholars ; they are very welcome. Our thanks to the compiler, Mrs. MAUD DAVIS. G. S.

Western Asia.

Dussaud, René. Topographie historique de la Syrie antique et médié-

vale. Haut Commissariat de la République Française en Syrie et au Liban. Service des antiquités et des beaux-arts. (*Bibliothèque archéologique et historique*, t. 4). LII + 632 p., 16 maps, Paris, GEUTHNER 1927. ISIS

Reviewed by E. BICKERMANN, *Deutsche Literaturzeitung*, 585-9, 1928; and by VICTOR CHAPOT, *Journal des Savants*, 84-5, 1928.

Central Asia.

David-Neel, Alexandra. Voyage d'une Parisienne à Lhassa. XII + 327 p., 28 photographs, 1 map. Paris, PLON, 1927. ISIS

Evans-Wentz, W. Y. The Tibetan book of the dead, or the after-death experiences on the Bardo plane, according to Lâma KAZI DAWA-SAMDUP's English rendering. With foreword by Sir JOHN WOODROFFE. XLIV + 248 p. Oxford, University Press, 1927. ISIS

Godard, A.; Godard, Y.; Hackin, J. Les antiquités bouddhiques de Bâmiyân. Avec des notes additionnelles de PAUL PELLIOT. (*Mémoires de la Délégation archéologique française en Afghanistan*, vol. 2). 120 p., 48 pl. Paris, G. VAN OEST, 1928. ISIS

Gompertz, Major **M. L. A.** (« Ganpat »). Magic Ladakh : an intimate picture of a land of topsy-turvy customs and great natural beauty. 291 p. London, SEELEY, SERVICE, 1928. ISIS

Müller, Reinhold F. G. Die Krankheits- und Heilgottheiten des Lamaismus. *Anthropos*, 22, 956-991, 1927. ISIS

Stein, Aurel (*editor*). Serindia. Detailed report of explorations in Central Asia and Western-most China carried out and described under the orders of H. M. Indian government. Indian Archaeological Survey. 5 vol. Vol. 1 : XXXIX + 547 p.; vol. 2, VIII + 541 p.; vol 3, XI + 491 p., with 59 maps and architectural drawings; vol. 4, 175 plates; vol. 5, 96 maps. Vol. 1 to 3 contain 345 illustrations. Oxford, Clarendon Press, 1921. ISIS

Very elaborate review by VICTOR GOLOUBEW, *Bulletin de l'École française d'Extrême Orient*, 25, 496-541, 1925.

Trinkler, Emil. Through the heart of Afghanistan. Edited and translated by B. K. FEATHERSTONE. 248 p. London, FABER and GWYER, 1928. ISIS

Trinkler, Emil. Afghanistan : eine landeskundlich Studie auf Grund des vorhandenen Materials und eigener Beobachtung. VII + 80 p., 4 pl. Gotha, JUSTUS PERTHES, 1928. ISIS

Eastern Asia.

(Including works relative to the whole of Buddhist Asia, or to India, Central and Eastern Asia combined)

Krause, Friedrich Ernst August. Geschichte Ostasiens. Vol. 1, 400 p.; vol. 2, 488 p., 2 maps; vol. 3, 80 p., 3 tables. Göttingen, VANDENHOECK und RUPRECHT, 1925. ISIS

Reviewed by PAUL PELLIOT, *T'oung Pao*, 25, 149-155, 1927.

9. — INDIA.

Chalmers, Lord. Further dialogues of the Buddha. Translated from the Pâli of the Majjhima Nikâya. Vol. 1, XXIV + 371 p. London, Oxford University Press, 1926. ISIS

Reviewed by W. STEDE, *Journal Royal Asiatic Society*, 569-572, 1926.

Coomaraswamy, Ananda K. Yakṣas. (*Smithsonian Miscellaneous collections*, vol. 80, no. 6). 43 p., 23 pl. Washington, D. C., Smithsonian Institution, 1928. ISIS

« Dr. VOGEL in Indian Serpent Lore (1926; *Isis*, 10, 234) has very recently and very admirably studied the old Indian (or perhaps we ought rather to say, the Indian aspect of the wildespread Asiatic) cult of Nâgas or Dragons, guardian spirits of the Waters. In the following pages I have attempted to bring together, from literary and monumental sources, material sufficient to present a fairly clear picture of an even more important phase of non- and pre-Aryan Indian « animism », the worship of Yakṣas and Yakṣîs, and to indicate its significance in religious history and iconographic evolution. » The Yakṣas are Hindu jinns, also patron saints or guardian angels, etc. Elaborate study, admirably illustrated. G. S.

Dasgupta, S. N. Die Medizin der alten Hindus. *Archiv für Geschichte der Medizin*, 20, 80-94, 1928. ISIS

Davids, T. W. Rhys (1843-1922). Ein Nachruf von W. STEDE. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 77, 137-142, 1923. ISIS

Goloubew, Victor. Documents pour servir à l'étude d'Ajanta; les peintures de la première grotte. (*Ars Asiatica*, vol. 10). 48 p., 66 pl., ill. Bruxelles, G. VAN OEST, 1927. ISIS

Reviewed by MARCEL GRANET, *Journal des Savants*, 42, 1928.

Iyengar, T. R. Sesha. Dravidian India. With a foreword by C. RAMALINGA REDDY. Vol 1, XIII + 254 p. Madras, India Printing Works, 1925. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 155, 1926.

Jacobi, Hermann. Einteilung des Tages und Zeitmessung im alten Indien. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 74, 247-263, 1920. ISIS

Keith, Arthur Berriedale. The religion and philosophy of the Veda and Upanishads. Part I, XIX + 312 p. Part 2, VII, 313 — 683 p. (*Harvard Oriental Series*, 31 and 32). Cambridge, Harvard University Press, 1925. ISIS

Kincaid, Charles Augustus; Parasnis, Rao Bahadur D. B. A history of the Maratha people. Vol. 3 : From the death of Shahu to the end of the Chitpavan epic. XII + 254 p., 8 pl. London, Oxford University Press, 1925. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 158, 1926.

Majumdar, Girija Prasanna. Vanaspati : plants and plant-life as in Indian treatises and traditions. (*Griffith Memorial Prize Essay*). XX + 254 p. Calcutta, The University, 1927. ISIS

Mazumdar, Bijay Chandra. Orissa in the making. With a foreword by Sir EDWARD A. GAIT. XII + 247 p., 9 pl., map. Calcutta, University of Calcutta, 1925. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 156-7, 1926.

Mukhopâdhyâya, (Bhisagâcârya) Girindranâth. History of Indian medecine. Containing notices, biographical and bibliographical, of Ayurvedic physicians and their works on medicine, from the earliest ages to the present time. Vol II. XXI + 518 p. University of Calcutta, 1926. ISIS

Prasad, Ishwari. History of mediaeval India, from A. D. 647 to the Mughal conquest. With a foreword by L. F. RUSHBROOK WILLIAMS. XXXIX + 602 p., 21 pl., 5 maps. Allahabad, Indian Press, 1925. ISIS

Reviewed by WOLSELEY HAIG, *Journal Royal Asiatic Society*, 780-783, 1926.

Rawlinson, Hugh George. Intercourse between India and the western world. 2nd ed. VI + 196 p. Cambridge, University Press, 1926. ISIS

First edition appeared in 1916. Reviewed by E. WALDSCHMIDT, *Deutsche Literaturzeitung*, 2310-2312, 1927.

Saksena, Ram Babu. A history of Urdu literature. With a foreword by TEJ BAHADUR SAPRU. VI + 379 p. Allahabad, Ram Narain Lal., 1928. ISIS

Samaddar, J. N. The glories of Magadha. With foreword by A. B. KEITH. (*Patna University readership lectures*, 1922). II + X + 165 p., 1 pl. Patna, Patna University, 1924. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 154, 1926.

Schierlitz, Ernst. Die bildichen Darstellungen der indischen Göttertrinität in der älteren ethnographischen Literatur. 94 p. München, HÖFFLING, 1927. ISIS

Reviewed by HERMANN GOETZ, *Deutsche Literaturzeitung*, 388, 1928.

Senart, Emile. Les castes dans l'Inde. Les faits et le système. Nouvelle édition publiée sous les auspices du Musée Guimet. VIII + 245 p. Paris, PAUL GEUTHNER, 1927. (40 frs.) ISIS

La première édition de cette étude magistrale parut il y a plus de trente ans, et cependant elle est à peine vieillie. L'ouvrage est divisé en trois parties: le présent, le passé, les origines. Je cite une partie de la conclusion : « La langue classique de l'Inde se distingue des langues congénères par une singularité frappante. Le verbe fini a peu de place dans la phrase; la pensée s'y déroule en composés longs, de relation souvent indécise. Au lieu d'une construction syntaxique solide où le dessin s'accuse, où les incidences se détachent elles-mêmes en propositions nettement arrêtées, la phrase ne connaît guère qu'une structure molle où les éléments de la pensée, simplement juxtaposés, manquent de relief. Les croyances religieuses de l'Inde ne se présentent guère en dogmes positifs. Dans les lignes flottantes d'un panthéisme mal défini, les oppositions et les divergences ne se soulèvent un moment que pour s'écrouler comme un remous instable dans la masse mouvante. Les contradictions se résolvent vite en un syncrétisme conciliant où s'énerve la vigueur des schismes. Une orthodoxie accommodante couvre toutes les dissidences de son large manteau. Nulle part de doctrine catégorique, liée, intransigeante. Sur le terrain social, un phénomène analogue nous apparaît dans le régime de la caste. Partout le même spectacle d'impuissance plastique. Quelque sève qu'il ait empruntée aux circonstances extérieures et historiques, c'est bien le fruit de l'esprit hindou. L'organisation sociale de l'Inde est à la structure des cités antiques ce qu'est un poème hindou à une tragédie grecque. Aussi bien dans la vie pratique que dans l'art, le génie hindou se montre rarement capable d'organisation, c'est-à-dire de mesure, d'harmonie. Dans la caste, tout son effort s'est épuisé à maintenir, à fortifier un réseau de groupes fermés, sans action commune, sans réaction réciproque, ne reconnaissant finalement d'autre moteur que l'autorité sans contrepoids d'une classe sacerdotale qui a absorbé toute la direction des esprits. Sous le niveau du brâhmanisme, les castes s'agitent, comme les épisodes se heurtent désordonnés dans la vague unité du récit épique. Il suffit qu'un système artificiel en masque théoriquement le décousu. » G. S.

Shcherbatskii, Fedor Ippolitovich. The conception of Buddhist Nirvana. VI + 246 p. Leningrad, 1927. ISIS

Thompson, Edward. Suttee. A historical and philosophical enquiry

into the Hindu rite of widow burning. 165 p. London, ALLEN and UNWIN, 1928. ISIS

Trevaskis, Hugh Kennedy. The land of the five rivers : an economic history of the Punjab from the earliest times to the Year of Grace 1890. XX + 372 p. Oxford, University Press, 1928. ISIS

Viswanatha, S. V. International law in ancient India. X + 214 p. Bombay, LONGMANS, GREEN, 1925. ISIS

Reviewed by L. D. BARNETT, *Journal Royal Asiatic Society*, 155-6, 1926.

Woodward, F. L. Some sayings of the BUDDHA. According to the Pali Canon. Translation. XI + 356 p. London, H. MILFORD, 1925. ISIS

Reviewed by MRS. RHYS DAVIDS in *Journal of the Royal Asiatic Society*, 346-49, 1926.

10. — CHINA.

Adolph, William Henry. Synthesizing a chemical terminology in China. *Journal of Chemical Education*, 4, 1233-1240, October 1927. ISIS

Describes a successful effort to build up from the ancient Chinese characters a language adequate for the needs of modern chemical science. T. L. D.

Bagchi, Prabodh Chandra. Le canon bouddhique en Chine. Les traducteurs et les traductions. Vol. I. (*Sino-Indica*, publications de l'Université de Calcutta, I). LII + 436 p. Paris, PAUL GEUTHNER, 1927. (125 frs.) ISIS

L'auteur de ce travail important est un élève de SYLVAIN LÉVI qui a vécu longuement avec lui à Santiniketan, dans la vallée du Nepal, en Extrême-Orient et finalement en France. Son livre ne remplace pas le « Catalogue of the Chinese translations of the Tripitaka » de BUNYIU NANJIO (1883), mais il le complète. En effet le catalogue de NANJIO était basé sur l'édition des Ming, mais depuis une nouvelle édition du Tripitaka a été publiée à Kyoto (1882-85) et a révélé des textes nouveaux. De plus de très nombreux travaux ont été consacrés à la littérature bouddhique depuis 1883. L'auteur se propose de nous donner un inventaire complet du Tripitaka chinois classé principalement par époques, secondairement par régions. Cette seconde subdivision étonne au premier abord mais elle s'explique par les considérations suivantes : « Le développement du Bouddhisme au sud du Fleuve Bleu semble s'être poursuivi d'une façon indépendante durant les époques des « Trois Royaumes » et des « États du Sud et du Nord ». C'est la période de la consolidation du Bouddhisme sur le sol chinois. Les textes traduits dans le Sud y avaient été généralement apportées par la voie de la mer et ceux traduits dans le Nord par les routes de l'Asie centrale. De même qu'on a déjà constaté que les textes apportés par la route de l'Asie centrale n'étaient pas toujours d'origine purement hindoue, peut-être pourra-t-on également montrer un jour que les textes apportés des îles de la mer du Sud (Nan-hai)

étaient quelquefois d'origine locale. C'est la coutume de Nan-Hai et non pas de l'Inde que YI-TSING étudia pour fournir les règles de la vie monacale des Chinois ». Ce premier volume s'arrête vers la fin du VI^e siècle; un second volume continuera l'inventaire jusqu'à la fin de la période mongole. Il est malheureux qu'un ouvrage contenant un aussi grand nombre de noms propres et de titres d'ouvrages ait été imprimé sans caractères chinois, mais l'auteur nous promet d'y remédier dans l'index. Espérons que ce second volume ne se fera pas trop attendre. G. S.

Bishop, C. W. The bronzes of Hsin-Chêng Hsien. Smithsonian Report for 1926, 457-468, 9 plates, Washington, 1927. Reprinted from *The Chinese Social and Political Science Review*, vol. 8, April 1924. ISIS

« One of the most significant archeological finds of recent years — perhaps the most significant, for the amount of new light which it throws on a highly important but hitherto little known ancient civilization — is that made at Hsin-chêng Hsien, in Honan, last summer (1923)..... In all, about 100 (bronze) vessels are known to have been discovered, although it is thought probable that the workmen stole a great many, particularly of the smaller pieces..... While opinions appear to differ as to the precise date of this most noteworthy interment, the prevailing view seems to be that it is of the latter part of the Chou dynasty, or, roughly, between 400 B. C. and 250 B. C..... The thought suggests itself in this connection (it is not original with me but has been in the air for several years) — can there not be established a school of Chinese archeology, supported by Chinese and foreign institutions alike, both for the training of a force of competent field workers and for the undertaking of a systematic study of the still remaining traces of man's former existence in this country ? Few things would do more, either to extend the general sum of human knowledge, or, more specifically, to enhance among occidental nations the appreciation of a great civilization, destined to exercise in the centuries to come, such a profound influence upon the destinies of mankind. »

Fonahn, A. Chats on medicine, myths and magic from Chinese classics and historical works. *Janus*, 31, 395-412, 1927. ISIS

Forke, Alfred. Geschichte der alten chinesischen Philosophie. XVI + 594 p. Hamburg, L. FRIEDERICHSEN, 1927. ISIS

Graham, David Crockett. Religion in Szechuan province, China. (*Smithsonian Miscellaneous collections*, vol. 80, no. 4) 83 p., 25 pl. Washington, Smithsonian Institution, 1928. ISIS

1. Introduction; 2. The ancestral cult and demons; 3. Birth, marriage, death, and burial; 4. Yinyang and fengshui; 5. Incantations, charms, and amulets; 6. Public ceremonies and religious festivals; 7. Divination, lucky days, vows, prayer, religious offerings, and worship; 8. Temples and sacred places; 9. The gods in Szechuan province; 10. Summary and conclusion. Bibliography « Religion in Szechuan is exceedingly practical. Every phase of it, every rite and ceremony, every god or temple, has to do with the satisfying of some human need that is felt to be important. They are the techniques that have been worked out and used during the past centuries by the masses

of untutored people as a means of securing satisfaction of the primary needs of man — food, sex, protection from enemies, from the forces of nature, and from disease, and play. To these people in their environment, such techniques have seemed and still seem most natural and reasonable. » G. S.

Ma, C. C. The origin of the term « root » in Chinese mathematics. *American Mathematical Monthly*, 35, 29-30, 1928. ISIS

Mallory, Walter H. China : land of famine. With a foreword by JOHN H. FINLEY. (*American Geographical Society, Special publication* no. 6). XIV + 199 p., 103 fig. New York, American Geographical Society, 1926. ISIS

An elaborate study by the secretary of the China International Famine Relief Commission. It is divided into eight chapters as follows : Causes of famine : economic, natural, political, social ; Cures for famine : idem. G. S.

Moule, A. C. A Western organ in medieval China. *Journal Royal Asiatic Society*, 193-211, 726, 1926. ISIS

« It is well known that the Chinese have had a little organ called *shêng* or *yü* for many ages, made with bamboo pipes which are fitted with free reeds, and played by suction. The words *shêng* and *huang*, the reed, occur in the Odes which date from before 500 B. C,, and are traditionally explained as referring to an instrument like that which is still in use. But attention has not, I think, been called to the fact that a reed organ from the West was brought to China in the thirteenth century, and created so much interest at the time that it was reconstructed to play the Chinese scale. Ten or twelve of these instruments seem to have been made and to have been used in the Imperial orchestra during the Yüan dynasty (1280-1368), but I cannot find that they were used after that period. Three descriptions of the *Hsing lung shêng*, as the organ was named, have been found in books of the fourteenth century, and translations of these are here given, with explanatory notes very kindly contributed by the Reverend Canon F. W. GALPIN. » See H. G. FARMER's paper (ibidem, 495-499) quoted below under Islam.

Paotchin, Lin. L'instruction féminine en Chine, après la révolution de 1911. *Thèse*. 188 p. Paris, JOUVE, 1926. ISIS

Reviewed by JOHANNES WITTE, *Deutsche Literaturzeitung*, 145-6, 1928.

Pelliot, Paul. Les Yi nien lou. *T'oung Pao*, vol. 25, 65-81, 1927. ISIS

Les Yi nien lou ou Répertoires des années douteuses sont des répertoires contenant les années de naissance et de mort de personnages connus. Le plus ancien est celui composé par TS'IEN TA-HIN (1728-1804), publié après sa mort en 1813. PELLIOT en cite huit autres qui se corrigent et se complètent. Tous ces ouvrages ont été récemment refondus en un seul par un érudit de Wou-tsin (Kiangsou), nommé TCHANG WEI-SIANG dont PELLIOT analyse et discute assez longuement l'œuvre, Yi nien lou houei pien (Collection reclassée des Yi nien lou, 1925). G. S.

Read, B. E. and **Partington, J. R.** Chinese alchemy. *Nature*, 120, 877-878, 1927. ISIS

Schmitt, Erich. Die Grundlagen der chinesischen Ehe. Eine historisch-ethnographische Studie auf Grund des Gesetzbuches der T'ang-Dynastie und Mandschu-Dynastie sowie ausgewählter klassischer und philosophischer Literatur. 223 S. Leipzig, BROKHAUS, 1927. ISIS

Reviewed by A. FORKE, *Deutsche Literaturzeitung*, 2295-97, 1927.

Swingle, Walter T. Chinese and other East Asiatic books added to the Library of Congress, 1926-27. *Report of the Librarian of Congress for the fiscal year ending June* 30, 1927, 245-278, 2 plates, Washington, 1927. ISIS

For SWINGLE's previous report, see *Isis* 10, 239 f. The present report is as interesting as usual. The Library has acquired 18 more official gazetteers, and many other geographical works, 20 new *ts'ung shu* (bringing the total of such collections up to 454, containing some 23000 works), many herbals. « Of the very rare first edition of the *Pên ts'ao kang mu* published in 1590 the Library of Congress now has a nearly complete copy, the lacking preface, list of compilers, and several folios deliberately changed in the spurious 1640 reprint being supplied by photographs, the text of books 1 to 50 and two books of illustrations being printed from the original blocks in the 1640 reprint. This first edition contains the earliest known mention of the American cereal maize growing in China. It reached the wild regions of western China less than a century after the discovery of America. LI SHIH-CHEN's detailed description and crude figure given under *yü shu shu* leave no doubt as to its identity with maize. » « The Library of Congress now contains 8 editions of this great Chinese materia medica and also photographic copies or reprints from the original blocks of almost all of the first edition, making 9 editions in all. One other Japanese reprint is in the library of the United States Department of Agriculture, making 10 editions available for study in Washington. A noteworthy addition to the collection of Chinese herbals is the *Shao Hsing chiao ting ching shih ch'êng lei pei chi pên ts'ao* compiled by WANG CHI-HSIEN, CHANG HSIAO-CHIH, TZU YUAN, and KUO SHAO-KUNG in 1159 A. D. » « The outstanding feature of this herbal supposed to have been the standard work of its class during the Southern Sung period is the size and excellence of its illustrations, far better than those of any other ancient herbal that has been preserved. » More versions of TS'AI HSIANG's monograph on the lychee (for which see my Introduction, vol. I, 766) have been obtained : « The Library of Congress now has about 20 texts of the *Li chih p'u*, 5 of them in photographic copy, 1 a manuscript copy, and the rest printed copies or rubbings made from stone or wood carved in the style of inscriptions. Every one of these differs from all of the others in some point and it is only by a study of all of them that a reasonably correct text of this great agricultural classic can be restored. » The Library has also a complete copy in 36 books of WANG CHEN's *Nung shu* (Book of agriculture). This copy « is especially valuable because of its beautiful illustrations, showing agricultural implements and machinery in use in China in the early part of the fourteenth century ». Four additional

volumes of the *Yung lo ta t'ien* have been secured. It is to be hoped that the Library will be able to obtain a complete set of photostat or manuscript copies of all the volumes in existence. The Korean collection has also been considerably increased, 103 works in 557 volumes being acquired, of which works 54 are not listed by COURANT. G. S.

Teng, Shu-chun. The early history of forestry in China. *Journal of Forestry*, 25, 564-570, 1927. ISIS

The history of forestry in China may be divided into three periods : (1) The « Ancient » Period, prior to about 1100 B. C., during which the clearing of the land for agricultural purposes was often followed by disastrous floods; (2) The « Golden » Period, which coincides approximately with the Chow Dynasty (1122-256 B.C.), during which two governmental commissions and a special corps of forestry police were maintained and « the Government actually realized the need of forest protection and attempted to carry out a conservative forest policy, without being forced to do so by wood shortage; (3) The « Dark » Period (about 250 B.C. — 1911 A.D.), « during which many factors worked together to bring about a steady destruction of the forests. » J. K. W.

(Wieger, Léon). Bibliographie méthodique des œuvres du Père LÉON WIEGER. Par HENRI BERNARD (S. J.). *T'oung Pao*, 25, 333-345, 1927. ISIS

11. — JAPAN.

Batchelor, John. Ainu life and lore. Echoes of a departing race. x + 449 p., 95 illustrations, 15 in full colour, portrait. Tokyo, Kyobunkwan (Christian Literature Society), (no date; received in 1928). ISIS

This book is valuable because it represents first hand and intimate knowledge. The author, the Ven. Dr. JOHN BATCHELOR, has been in contact with the Ainu for over half a century. He was made an honorary member of the Hokkaidô government and is in receipt of a pension in recognition of his work among the Ainu race. His extensive record is of great ethnological interest; it contains abundant illustrations, many of them in color. G. S.

Chamberlain, Basil Hall. Things Japanese, being notes on various subjects connected with Japan, for the use of travellers and others. Reprint of the 1905 edition (fifth edition revised) with the addition of two Appendices. 591 p., portrait, map. London, KEGAN PAUL, 1927. ISIS

First edition, Tokyo 1890.

Ôhasama, Schûej. Zen, der lebendige Buddhismus in Japan. Ausgewählte Stücke des Zen-Textes, übersetzt und eingeleitet. Hrsg. von AUGUST FAUST mit Geleitwort von RUDOLF OTTO. XVIII + 197 p. Gotha, PERTHES, 1925. ISIS

Reviewed by ERICH SCHMITT, *Deutsche Literaturzeitung*, 127-8, 1928.

Sansom, G. B. An historical grammar of Japanese. 364 p. Oxford, Clarendon Press, 1928. ISIS

« The chief object of this work is to provide material for study of the affiliations of the Japanese language, and, in so far as philological evidence is of value, for inquiry into the origins of the Japanese race; but it has been so planned as to be, I hope, of interest to students of general linguistic theory. I trust also that advanced students of Japanese, especially those who wish to read early or medieval texts, will find it useful as a work of reference; and even those who are concerned only with the modern spoken and written languages, will, I believe, find many of their difficulties removed by gaining some knowledge of the development of grammatical forms and the growth of common idioms. »

12. — ISRAEL.

Baynes, Norman H. Israel amongst the nations. An outline of Old Testament history. 328 p. London, Student Christian Movement, 1927. ISIS

Reviewed by JOH. HEMPEL, *Deutsche Literaturzeitung*, 42-48, 1928.

Bousset, Wilhelm. Die Religion des Judentums im späthellenistischen Zeitalter. 3. verb. Aufl. hrsg. von HUGO GRESSMANN. (*Handbuch zum Neuen Testament*, hrsg. von HANS LIETZMANN, Nr. 21). XI + 576 p. Tübingen, MOHR, 1926. ISIS

First edition 1903, second edition 1906. Reviewed by ERICH FASCHER *Deutsche Literaturzeitung*, 2140-2143, 1927.

Cohen, D. E. De vroegere Amsterdamsche joodsche doctoren. *Bijdragen tot de geschiedenis der geneeskunde*, 7, 625-641, 1927. ISIS

Friedlander, Arthur M. Facts and theories relating to Hebrew music. *Royal Asiatic Society*, Centenary Supplement, 87-102, 1 pl., 1924. ISIS

Gaster, Moses. The Asatir : the Samaritan Book of the « Secrets of Moses » together with the Pitron or Samaritan Commentary and the Samaritan story of the death of MOSES. Published for the first time, with introduction, translation and notes. 352+59 p. *Oriental translation fund*, n. s., vol. 26). London, Royal Asiatic Society, 1927. ISIS

Ginzberg, Louis. The legends of the Jews. Vol. V. Notes to volumes I and II. From the Creation to the Exodus. XI + 446 p. Philadelphia, Jewish Publication Society of America, 1926. ISIS

Goulven, J. Les mellahs de Rabat-Salé. Préface de GEORGES HARDY.

Dessins de HAINAUT; couverture de JABIN. XII + 165 p., 32 pl. Paris, GEUTHNER, 1927. ISIS

Étude fort bien illustrée et qui parait fort bien documentée sur les Juifs de Rabat et de Salé. G. S.

Gressman, Hugo. Altorientalische Texte und Bilder zum Alten Testament, gesammelt und beschrieben. Zweite, völlig neugestaltete und stark vermehrte Auflage. 224 p., 260 pl. with 678 fig., 1 map. Berlin, W. DE GRUYTER, 1927. ISIS

Reviewed by JOH. HEMPEL, *Deutsche Literaturzeitung*, 2089-2095, 1927. First edition, Tübingen, 1909.

Halper, Benzion. Post-biblical Hebrew literature. An anthology. 2 vols. XX + 300 p., 251 p. Philadelphia, Jewish Publication Society of America, 1921. ISIS

Excellent anthology which illustrates admirably the continuity of the Hebrew language. It contains extracts from representative authors in many fields (except Halakah and biblical exegesis) : Mishnah, Talmud, Midrash, liturgy, poetry, philosophy, ethics, history, geography, folklore, travel, philology, epistles, ethical wills, etc. The preparation of this work involved considerable work for « it may justly be said that of all medieval literature Hebrew books are the most studied but the least edited. » Thus many of the texts here published had to be edited from imperfect editions and even from Mss. The first volume contains the Hebrew texts, with notes, a glossary of non-biblical words and an excellent preface; the second volume contains the English translation. To illustrate the chronological range of this anthology, it will suffice to say that it begins with the Wisdom of BEN SIRA and ends with NAPHTALI HIRZ WESSELY (d. 1805), — a range of two millennia. G. S.

Hoschander, Jacob. The Book of Esther in the light of history. IX + 318 p. Philadelphia, The Dropsie College, 1923. ISIS

Reviewed by H. HIRSCHFELD, *Journal Royal Asiatic Society*, 580-582, 1926.

Marx, Alexander. Mr. BAMBERGER's donation to the Seminary Library. *United Synagogue Recorder*, vol. 8, 13-15, New York, 1928. ISIS

Apropos of a gift of c. 60 Mss. made by LOUIS BAMBERGER of Newark, to the Library of the Jewish Theological Seminary of America. I copy the final paragraph, of special interest to our readers : « The medical Mss. greatly add to the Seminary's particularly rich store in this field. They include several hitherto unknown treatises, the most important of them being a new translation of HIPPOCRATES' Aphorisms by SHEM TOB BEN ISAAC of Tortosa. This well-known translator started this work in his seventieth year in Marseilles and finished it in Tarascon. This is the fifth Hebrew translation from the Arabic of this famous medical work, which evidently was of very great interest to the Jews. Three translations have been known for a long time, and a fourth one by a certain JACOB IBN ZABARA was discovered among the manuscripts of the Seminary, which thus can boast of two unique copies. What increases the value of the new translation is the fact that it combines

with the text a commentary by PALLADIUS, hitherto known only through a few quotations. One of the medical works of GALEN translated from the Arabic and accompanied by a commentary by a famous Arabic physician is extant only in very few Mss. There is further a part of AVICENNA's great medical work, the Canon Book IV, in a German handwriting of the fifteenth century in which the chapters are not counted, an unusual and inconvenient arrangement, and also several volumes containing various smaller medical treatises by Jewish and non-Jewish authors, some of them entirely unknown. »

Marx, Alexander. Reports of the Librarian published in the Registers of the Jewish Theological Seminary of America, 531 West 123rd Street, New York; 121-140, 1924; 124-140, 1925; 124-145, 1926; 129-159, 1927. ISIS

I owe to Dr. MARX's courtesy reprints from his reports included in the Registers for the years 5686 to 5688. They are very interesting. The Library of the Jewish Theological Seminary is already very rich and its wealth is increasing fast. At the time of the Seminary's reorganization in 1902, it contained c. 5000 books; in 1927, it contained c. 77,000 printed books and pamphlets and c. 6000 Mss. It has gradually absorbed a number of valuable private libraries and collections, namely those of DAVID CASSEL, S. MORAIS, MAYER SULZBERGER, S. J. HALBERSTAM, EPHRAIM DEINARD, MORITZ STEINSCHNEIDER, E. KAUTZSCH, MARX and MOSES OTTINGER, SOLOMON SCHECHTER, ISRAEL SOLOMONS, MAURICE HERRMANN, ELKAN N. ADLER. It is particularly rich in Hebrew editions of the fifteenth and sixteenth centuries, books printed in the Orient, in Russia before 1840, in America, Judeo-Persian and Judeo-Spanish editions, Anglo-Judaica, documents on the Inquisistion. To give here a more detailed account of this Library, which will soon be one of the greatest centers of information on Judaica and Hebraica, is obviously out of the question. I shall simply quote by way of illustration, two items of the Register for 1926 : « An important medical manuscript on vellum, written in Spain in the fifteenth century, contains four medical treatises, among them the Digestiva et Purgantia by ARNOLD DE VILLA NOVA in ABRAHAM ABIGDOR's Hebrew translations, the Antidotarium of NICOLAUS PRAEPOSITUS and AVICENNA's rhymed book on medicine in a Hebrew translation, which seems to differ from those enumerated by STEINSCHNEIDER » ..... « A xvth century Ms. of a medical traetise on diets and the medical value of plants, written in Spain, incomplete and not yet identified. » Further reports will be mentioned in *Isis* as they appear. G. S.

Moore, George Foot. Judaism in the first centuries of the Christian era, the age of the Tannaim. Two volumes : XII + 552 p.; VIII + 486 p. Cambridge, Harvard University Press, 1927. ISIS

Reviewed by SAMUEL SCHULMAN, the *Jewish Quarterly Review*, 18, 339-355, 1928.

Reisner, George Andrew; Fisher, Clarence Stanley; Lyon, David Gordon. Harvard excavations at Samaria, 1908-1910. Vol. 1 — text, 417 p.; vol. 2 — XXII p., plans, 90 pl. Cambridge, Harvard University Press, 1924. ISIS

Reviewed by T. G. PINCHES, *Journal Royal Asiatic Society*, 548-550, 1926.

Scheftelowitz, J. Alt-Palästinenischer Bauernglaube in religionsvergleichender Beleuchtung. III + 181 p. Hannover, HEINZ LAFAIRE, 1925. ISIS

Reviewed by D. S. MARGOLIOUTH, *Journal Royal Asiatic Society*, 568-9, 1926.

Scholem, Gerhard. Bibliographia Kabbalistica. Verzeichnis der gedruckten, die jüdische Mystik (Gnosis, Kabbala, Sabbatianismus, Frankismus, Chassidismus) behandelnden Bücher und Aufsätze von REUCHLIN bis zur Gegenwart. Mit einem Anhang : Bibliographie des Zohar und seiner Kommentare. (*Quellen und Forschungen zur Geschichte der jüdischen Mystik*, Bd. 2). XVI + 230 p. Leipzig, W. DRUGULIN, 1927. ISIS

Reviewed by E. DARMSTAEDTER, *Mitt. zur Geschichte der Medizin*, 27, 44, 1928.

Smith, William Robertson. Lectures on the religion of the Semites. The fundamental institutions. 3rd edition edited by STANLEY A. COOK, LXIV + 718 p., portrait. London, A. and C. BLACK, 1927. ISIS

Reviewed by JOH. HEMPEL, *Deutsche Literaturzeitung*, 42-48, 1928.

13. — IRAN.

Fisher, B. Irrigation systems of Persia. *Geographical Review*, 302-306, 1928. ISIS

Explaining the system of subterranean canals (qanât) as described by POLYBIOS and as it is to-day. The author, Commodore FISHER, is principal of the American Boys' School, in Hamadan. G. S.

Hertel, Johannes. Die Sonne und Mithra im Awesta, auf Grund der awestischen Feuerlehre dargestellt. (*Indo-Iranische Quellen und Forschungen*, Heft 9). XXVIII + 318 p. Leipzig, HAESSEL, 1927. ISIS

Reviewed by REINHOLD F. G. MÜLLER, in *Mitt. zur Geschichte der Medizin*, 27, 49, 1928.

Saussure, Léopold de (d. 1925). Note sur l'origine iranienne des mansions lunaires arabes. *Journal asiatique*, 207, 166-8, 1925. ISIS

14. — ISLAM.

Abdou, (Cheikh) **Mohammed.** Rissalat al-Tawhid. Exposé de la religion musulmane, traduit de l'arabe avec introduction sur la vie et les idées du Cheikh MOHAMMED ABDOU. Par B. MICHEL et le

Cheik MOUSTAPHA ABDEL RAZIK. XC + 150 p. Paris, GEUTHNER, 1925. ISIS

Reviewed by D. B. MACDONALD, *Isis*, 9, 456-7, 1927.

Andrae, Tor. Der Ursprung des Islams und das Christentum. IV + 206 p. Uppsala et Stockholm, ALMQUIST et WIKSELL, 1926. ISIS

Reviewed by GAUDEFROY-DEMOMBYNES, *Journal des Savants*, 135-7, 1928.

Brunel, René. Essai sur la Confrérie religieuse des 'Aîssâoûa au Maroc. (*Thèse*). XVI + 258 p. 10 pl. Paris, GEUTHNER, 1926. ISIS

Reviewed by R. HARTMANN, *Deutsche Literaturzeitung*, 2151-2153, 1927.

Castagné, Joseph. La latinisation de l'alphabet turk dans les réplubliques turko-tatares de l'U. R. S. S. *Revue des Études Islamiques*, 321-353, 1927. (published 1928). ISIS

Chevrillon, André. Les puritains du désert (Sud-Algérien). 273 p. Paris, PLON, 1927. ISIS

Farmer, Henry George. The organ of the Muslim kingdoms. *Journal Royal Asiatic Society*, 495-99, 1926. ISIS

Apropos of A. C. MOULE's study, A western organ in medieval China (ibidem, 193-211) for which see this bibliography under China.

Furlani, G. Astrologisches aus syrischen Handschriften. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 75, 122-128, 1921. ISIS

Apropos of the Syriac Ms. British Museum 4434 (MARGOLIOUTH's List, 1899, p. 42) containing astrological texts translated from the Arabic. G. S.

Goldziher, Ignaz (1850-1921). Ein Nachruf von RICHARD HARTMANN. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 76, 285-290, 1922. ISIS

Goldziher, Ignaz (1850-1921). Vorlesungen über den Islam. Zweite, umgearbeitete Auflage von FRANZ BABINGER. XI + 406 p., port. Geleitwort von C. H. BECKER. (*Religionswissenschaftliche Bibliothek*, 1). Heidelberg, CARL WINTER, 1925. ISIS

Reviewed by ALFRED GUILLAUME, *Journal Royal Asiatic Society*, 353-4, 1926.

Jacob, Georg. Arabische Berichte von Gesandten an germanische Fürstenhöfe aus dem 9. und 10. Jahrhundert. Ins Deutsche übertragen und mit Fussnoten versehen. (*Quellen zur deutsch. Volkskunde*, hrsg. von V. VON GERAMB und L. MACKENSEN). 50 p. Berlin and Leipzig, W. DE GRUYTER, 1927. ISIS

Reviewed by R. HARTMANN, *Deutsche Literaturzeitung*, 521-3, 1928.

Macdonald, Duncan Black. Continuous re-creation and atomic time in Muslim Scholastic theology. *Isis*, 9, 326-344, 1927. ISIS

« The Muslim peoples have viewed creation, or the origin of the visible world in time and space, in, broadly speaking, three different ways. » The present paper deals with the third way, which may be called the Atomistic, and of which the best description may perhaps be found in MAIMONIDES's Guide of the Perplexed. This description is here analyzed and discussed. The paper ends with a suggestive comparison with similar views in Buddhist, Santrântika, philosophy. G. S.

Miller, Konrad. Mappae arabicae. Arabische Welt- und Länderkarten des 9. -13. Jahrhunderts in arabischer Urschrift, lateinischer Transkription und Uebertragung, in neuzeitliche Kartenskizzen, mit einleitenden Texten herausgegeben. Selbstverlag der Herausgebers, Staffelnbergstrasse, 54, Stuttgart, 1926 (et seq.) ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 458-62, 1927.

Pernot, Maurice. En Asie musulmane. 243 p. Paris, HACHETTE, 1927. ISIS

Reviewed by J. CANTINEAU, *Revue des arts asiatiques*, 4, 236-7, 1927.

Ribera y Tarragó, Julián. La enseñanza entre los Musulmanes Españoles. Bibliofilos y Bibliotecas en la España musulmana. (*Publicaciones de la Real Academia de Córdoba*). 3a edición. 121 p. Cordoba, La Comercial, 1925. ISIS

Welcome reprint of two memoirs which first appeared more than thirty years ago. The earliest and longest (108 p., closely printed), dealing with Muslim education in Spain, was originally read at the University of Saragossa in 1893. I have not seen it in the original form, but imagine that the present edition is considerably larger as it is much too long for a single lecture. Various Arabic documents are printed in appendix (p. 89-96). The second memoir (22 p.) on the Booklovers and libraries of Muslim Spain, was originally a thesis presented to the same university shortly afterwards. The value of this reprint is materially increased by a biographical introduction with a portrait. Don JULIÁN was born in 1858 at Carcagente, province of Valencia; his father wanted him to study law; he became a bachelor in Valence and a doctor in Madrid. He was attracted by the austere teaching of FRANCISCO CODERA Y ZAIDÍN and this determined the course of his life. He became assistant and collaborator of Don FRANCISCO and in 1887 was appointed to the chair of Arabic in Saragossa. Thanks to his activity and enthusiasm, Saragossa thus became the nursery of Islamic studies in Spain. Practically all of Spanish Arabists now living are his pupils, the foremost of these being Don MIGUEL ASÍN Y PALACIOS whose work has often been discussed in *Isis*. May Don JULIÁN's generous activity be continued, and his influence be felt, for many years to come. G. S.

Rif'at Pasha, Ibrâhîm. View of the two sanctuaries (mir'ât al-ḥaramain In Arabic. 2 vols. 514 + 395 p. Miṣr (Cairo), 1344-1925. ISIS

Reviewed by MAX MEYERHOF, *Isis* 9, 130-133, 1927.

Rihani, Ameen. IBN SA'OUD of Arabia : his people and his land. XVII + 370 p. London, CONSTABLE, 1928. ISIS

Ruska, Julius. Zur geographischen Literatur im islamischen Kulturbereich. *Geographische Zeitschrift*, 33, 519-528, 589-599, 1927. ISIS

A useful summary and appraisal of the outstanding achievements of the medieval Moslems in the field of geographical science and description. J. K. W.

Ruska, Julius. CARL SCHOY (Geb. den 7. April 1877, gest. den 6. Dezember 1925). *Isis*, 9, 83-95, 1927. ISIS

Biography of our much lamented friend with bibliography and portrait. SCHOY was at the time of his death, the leading student of Arabic astronomy and trigonometry. Many of his very valuable papers appeared in *Isis*. G. S.

Schwarz, P. Fânîd und Verwandtes, ein sprachlicher Beitrag zur Geschichte des Zuckers. *Zeitschrift der deutschen morgenländischen Gesellschaft*, 74, 238-246, 1920. ISIS

See on the same subject J. RUSKA's article sukkar in *Encyclopaedia of Islam* (vol. 4, 509, 1927). G. S.

Seabrook, W. B. Adventures in Arabia among the Bedouins, Druses, whirling Dervishes, and Yezidee devilworshippers. Illustrated with many photographs and with pen drawings by A. G. PECK. 313 p. New York, HARCOURT, BRACE, 1927. ISIS

Toynbee, Arnold Joseph. The Islamic world since the peace settlement. XVI + 611 p. (*Survey of international affairs*, 1925; Vol. 1). London, Oxford University Press, 1927. ISIS

Reviewed by PHILIP K. HITTI, *American Historical Review*, 33, 659-61, 1928.

PART III.

SYSTEMATIC CLASSIFICATION.

Including only the materials which could not be included in Parts I and II. Hence studies on Japanese astronomy or on XIIth century astronomy are not classified below under astronomy, but above, respectively under Japan (in Part II) and XIIth Century (in Part I).

The sections forming Part III are classified as follows :

I. *Science in general* : 15. Bibliography; 16. History; 17. Organization; 18. Philosophy.

II. *Formal sciences* (Knowledge of forms) : 19. Logic and Theory of Knowledge; 20. Mathematics; 21. Statistical methods.

III. *Physical sciences* (Knowledge of inorganic nature) : 22. Mechanics; 23. Astronomy; 24. Physics; 25. Chemistry (Physico-chemistry, Industrial chemistry); 26. Technology.

IV. *Biological sciences* (Knowledge of organic nature) : 27. Biology (Generalities, « Natural history »; 28. Botany (Agronomy, Phytopathology, Palaeobotany); 29. Zoology.

V. *Sciences of the earth* (implying knowledge of both organic and inorganic nature) : 30. Geodesy; 31. Geography and Oceanography; 32. Geology, Mineralogy, Paleaontology, Mining; 33. Meteorology, Climatology and Terrestrial Physics.

VI. *Anthropological and historical sciences* (Knowledge of man, past and present) : 34. Anatomy; 35. Physical anthropology (anthropometry and races of man); 36. Physiology (human and comparative); 37. Psychology (human and comparative); 38. Archaeology (generalities, methods); 39. Prehistory; 40. Ethnology (primitive and popular science); 41. Superstition and Occultism.

42. Economics (economic doctrines and history; commerce; transportation and communications); 43. Sociology, Jurisprudence and Positive Polity; 44. History of Civilization (general history, historical methods, biography and chronology); 45. History of Art (Art and science; Iconography; Arts and crafts); 46. History of Language, Writing and Literature; 47. History of Morals (Moral organization of society); 48. History of Philosophy; 49. History of Religion (Science and religion).

VII. *Medicine* : 50. History, organization and philosophy of medicine; 51. Epidemiology, History of special diseases. Public health and Social medicine; 52. History of hospitals and of medical teaching; 53. Pharmacy; Pharmacology; Toxicology.

VIII. *Education* (the methods of accumulating, imparting and diffusing knowledge) : 54. Education (Generalities, Methods, Colleges, Universities); 55. Academies, societies, congresses, National and international organization of science; 56. Bibliography (Methods, Libraries); 57. Museology (Museums and Collections).

IX. 58. Alia; 59. Errata.

The applied sciences are not disconnected from the pure sciences, but, as far as possible, the principles and applications of science are considered in the same section. However, applications based upon the principles of many sciences are dealt with separately (e.g., technology; medicine; education).

I. SCIENCE IN GENERAL.

16. — HISTORY OF SCIENCE.

Barnes, Harry Elmer. The history of science : teaching and personalia. *Isis*, 9, 112-117, 1927. ISIS

1. The teaching of the history of science in Germany; 2. The history of science in the United States; 3. The teaching of the history of science in Italy; 4. Germany; 5. France; 6. Switzerland; 7. United States.

Brewster, Edwin Tenney. Creation. A history of non-evolutionary theories. 295 p., 30 pl. Indianapolis, The Bobbs-Merrill Co., 1927. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 462-5, 1927.

(History of Science Society). List of members of the History of Science Society elected from January 30, 1925 to July 31, 1926. *Isis*, 9, 7-10, 1927. ISIS

(History of Science Society). Report of the meetings for 1925 and 1926, by FREDERICK E. BRASCH. *Isis*, 9, 223-225, 1927. ISIS

(Isis). Contents of the first eight volumes of *Isis*. *Isis*, 9, 383-386, 1927. ISIS

(Isis). Early volumes of *Isis*. Short note by GEORGE SARTON. *Isis*, 9, 117-118, 1927. ISIS

(Isis). Publication fund. *Isis*, 9, 364, 1927. ISIS

Lasswitz, Kurd (1848-1910). Geschichte der Atomik vom Mittelalter bis NEWTON. 2. Bände, 2. mit ersten übereinstimmenden Auflage. XII + 518 p., VIII + 609 p. Leipzig, LEOPOLD VOSS, 1926. ISIS

Reviewed by HUGO DINGLER, *Isis*, 9, 465-7, 1927.

(London. Science Museum). The new Science Museum. *Nature*, 121, 458-460, 1928. ISIS

Moureu. Ch. Discours et conférences sur la science et ses applications. 372 p. Paris, GAUTHIER-VILLARS, 1927. ISIS

Reviewed by F. MICHEL, *Revue générale des Sciences*, 39, 151, 1928.

Picard, Emile. De NEWTON à LAPLACE. *Revue des deux mondes*, 174-94, 1 juillet 1927. ISIS

Écrit pour commémorer le double anniversaire de la mort de NEWTON et de LAPLACE.

Ruska, Julius. Die Naturwissenschaften und ihre Geschichte. *Der Kristall, das Wissen der Zeit*, vol. 1, 88-93, March 1928. ISIS

General views on the history of science.

Sarton, George. Introduction to the history of science. Vol. 1, From HOMER to OMAR KHAYYAM. XII + 839 p. (Carnegie Institution of Washington, Publication no. 376). Baltimore, WILLIAMS and WILKINS, 1927. (ten dollars). London, BAILLIÈRE, TINDALL (45 sh.) ISIS

Reviewed by H. E. BARNES in *Social Forces* vol. 6, 304, Baltimore 1927 ;

by ARNOLD BENNETT in *London Evening Standard*, Jan. 5, 1928; by Dom HUGO BÉVENOT (O.S.B.) in *Literarische Beilage zur Augsburger Postzeitung*, 7. März, 1928, S. 38; by E. G. BORING in *American Journal of Psychology* p. 150, 1928; by A. CORSINI, in *Rivista di Storia delle Scienze Mediche e Naturali*, 18, 271, 1927; by JOSHUA FINKEL in *Jewish Quarterly Review*, vol. 18, 445-48, 1928; by ADOLF MEYER in *Berichte über die wissenschaftliche Biologie*, Band 6, Heft 8, 1928; by ADOLF MEYER in *Zentralblatt für Bibliothekswesen*, 1928; very elaborate review (52 p.) by YOSHIO MIKAMI, *Shigaku*, vol. 7, no. 1, Tokyo, March 1928 (in Japanese); by YOSHIO MIKAMI in the *Tokyo Butsuri Gakkô Zasshi*, dai 433, p. 35-37, Dec. 1927 (Journal of the Tokyo school of physics, in Japanese); by FRANCIS R. PACKARD, *Annals of Medical History*, 10, 108-110, 1928; by RAYMOND PEARL, *Quarterly Review of Biology*, 3, 149-50, March 1928; by JULIUS RUSKA, *Archiv für Geschichte der Mathematik*, 10, 467-8, 1928; by Q. VETTER in *Stredin Skola*, 8, 208, 1928; by LYNN THORNDIKE in *American Historical Review*, 33, 363-366, 1928; by QUIDO VETTER in *Rise hvezd*, organ of the Czech Astronomical Society, vol. 9, 46, 1928 (in Czech); by QUIDO VETTER in *Casopis pro pestovani matematiky a fysiky*, 57, 161-163, 1928; by HENRY R. VIETS in *Boston Medical and Surgical Journal*, vol. 197, 1371, Jan. 19, 1928; by DANIEL WARNOTTE, in *Revue de Sociologie*, p. 902, Bruxelles, 1927; by ERNST BLOCH in *Zeitschrift für den physikalischen und chemischen Unterricht*, Heft 3, 157, 1928. For other reviews, see *Isis*, 11, 234.

Sarton, George. Ninth report to the Carnegie Institution. Year Book no. 26, p. 346, Washington, Carnegie Institution, 1927. ISIS

Report for the year ending on June 30, 1927. 1. *Introduction to the history of science*; 2. Publication of *Isis*; 3. Lectures.

Sarton, George. Twentieth critical bibliography of the history and philosophy of science and the history of civilization (to May 1926). *Isis*, 9, 145-220, 4 plates, 1927. ISIS

Containing 535 items. Some of the notes were contributed by T. L. DAVIS (Cambridge, Mass.), L. GUINET (Brussels), H. METZGER (Paris), D. E. SMITH (New York), H. WIELEITNER (Munich), J. K. WRIGHT (New York).

Sarton, George. Twenty first critical bibliography of the history and philosophy of science and of the history of civilization. (to October 1926). *Isis*, 9, 491-613, 1927. ISIS

« This Twenty First Bibliography contains 769 items. Some of the notes were contributed by T. L. DAVIS (Cambridge, Mass.), HUGO DINGLER (Munich), L. GUINET (Brussels), L. LEROUX (Paris), R. M. MAY (Paris), J. STEPHENSON (Edinburgh), N. TRANSEHE (New York), H. WIELEITNER (Munich), J. K. WRIGHT (New York). »

Sarton, George. Preface to Volume IX. *Isis*, 9, 226-233, 1927. ISIS

« Among all the marvels of nature, none is more marvelous than our cognizance of them; among all the beauties, none is more ravishing than the beauty of human art, unless it be the more cryptic beauty of human science. The man of science is like a seeing man among the blind; yea, if he be truly hu-

manised, he is like a king. But if he is not educated, he is more likely to suggest comparison with a spoiled and ill-mannered child. Which shall we be ? »

Stein, Robert. Alte französische Zeitschriften für deutsche medizinische und naturwissenschaftliche Literatur. *Archiv für Geschichte der Mathematik*, 10, 473-5, 1928. ISIS

Strunz, Franz. Astrologie, Alchemie, Mystik : ein Beitrag zur Geschichte der Naturwissenschaften. 351 p. München-Planegg, OTTO WILHELM BARTH, 1928. ISIS

(Sudhoff Medals). *Isis*, 9, 428, 1927. ISIS

Announcing first awards (1926) to GEORG STICKER and E. O. VON LIPPMANN.

Turner, Dorothy M. History of science teaching in England. x + 208 p. London, CHAPMAN and HALL, 1927. ISIS

Turner, Dorothy M. The philosophical aspect of education in science. *Isis*, 9, 402-419, 1927. ISIS

1. WHEWELL and the place of science in a liberal education; 2. HERBERT SPENCER and education for complete living; 3. HUXLEY and retrospective prophecy; 4. The discipline of science; 5. The certainty of science. The ignorance of science.

17. — ORGANIZATION OF SCIENCE.

(Internal organization is meant, see Isis 1, 195. *For external, national or international, organization, see section* 55).

Holmyard, E. J. General science. (Mainly chemistry and biology). XIII + 236 p., 8 portraits. London, J. M. DENT, (preface dated Sept. 1927). 4 sh. ISIS

The author's Introductory textbook (1926) was reviewed in *Isis*, 9, 563. The present volume is even more original than the former, as may be judged at once from the table of contents : 1. Gunpowder; 2. Sulphur; 3. Salt and Chile saltpetre; 4. How plants live; 5. The explanation of combustion; 6. Sugar, alcohol and fermentation; 7. Anaesthetics and poisons; 8. Coal-tar and coal-gas; 9, Bacteria and antiseptics; 10. The coinage metals. Historical notes are introduced here and there to add a literary and romantic savor to the narrative. This interesting textbook will hold the boys' attention and give them valuable information on a number of subjects. The author was well prepared to write it; as head of the science department of Clifton College, Bristol, he has much practical experience as to the needs, scientific or practical, of the boys for whom his work was written. I read with special pleasure, the chapter on combustion, which includes a good history of our views on the subject. G. S.

(Lecat, Maurice). Notre misère scientifique. Ses causes — ses remèdes.

L'Appel du roi. Par Q. M. QUAERIS et des collaborateurs. 56 p. Bruxelles, FR. SAEY, 1928. ISIS

Discussion of the organization of scientific research in Belgium. G. S.

(Scientia). Note by L. GUINET to celebrate the twentieth anniversary of Scientia. *Isis*, 9, 428-9, 1927. ISIS

18. — PHILOSOPHY OF SCIENCE.

Barry, Frederick. The scientific habit of thought : an informal discussion of the source and character of dependable knowledge. XIII + 358 p. New York, Columbia University Press, 1927. ISIS

Koch, Richard. Ueber Kausalität. *Archiv für Geschichte der Mathematik* 10, 369-396, 1928. ISIS

Metzger, Hélène. Les concepts scientifiques. Préface de ANDRÉ LALANDE. 195 p. Paris, ALCAN, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 467-70, 1927.

Mochi, Alberto. La connaissance scientifique. 272 p. Paris, ALCAN, 1927. ISIS

Voici une nouvelle classification des sciences pensée par un médecin « dans le désert africain où la guerre l'avait jeté », et alors qu'aucune classification des sciences ne lui était connue ! Il les a connues dans la suite, celle de COMTE et celle d'ADRIEN NAVILLE surtout (*Isis*, 4, 118), et il cherche à faire voir en quoi la sienne leur est supérieure. L. G.

Pupin, Michael Idvorsky. The New Reformation : from physical to spiritual realities. XVII + 273 p., 8 pl. New York, CHARLES SCRIBNER, 1927. ISIS

II. FORMAL SCIENCES
(Knowledge of forms).

19. — LOGIC AND THEORY OF KNOWLEDGE.

Bachelard, Gaston. Essai sur la connaissance approchée. 312 p., J. VRIN, Paris, 1927. ISIS

L'auteur s'est proposé l'étude de la connaissance scientifique (sans chercher quelles en sont les conditions primitives) dans sa tâche de précision. Partant de cette définition ; « connaître, c'est décrire pour retrouver », il examine d'abord comment les détails s'accumulent en gardant les grandes lignes d'une description, et comment les qualités s'ordonnent pour aboutir à un classement objectif (pp. 9-46). Il montre ensuite quel est le rôle des approximations dans les sciences expérimentales où le processus est fini (47-168), et dans les mathématiques, où l'approximation paraît toujours réglée, pro-

gressive, susceptible d'un développement infini (169-242). Cette recherche du mieux, de la rectification, constitue en somme une philosophie de l'inexact, à la lumière de quoi BACHELARD examine les concepts de réalité et de vérité : « la rectification... est la véritable réalité épistémologique, puisque c'est la pensée dans son acte, dans son dynamisme profond ». L. G.

Essertier, Daniel. Les formes inférieures de l'explication. IV + 358 p., FÉLIX ALCAN, Paris, 1927. ISIS

L'auteur s'est demandé comment l'homme avait pour la première fois rattaché, en pensée, un phénomène qui se présente à lui isolé, à un autre phénomène qui contient la raison de son existence, et si les premières formes qu'a revétues cet acte mental qui le libérait de l'animalité contenaient nécessairement les formes supérieures de l'activité mentale. Constatant que la logique primitive ne fait que river l'homme aux formes inférieures de l'explication, et que la pensée collective aggrave encore le fait, il répond négativement à cette question. L'homme n'a pu s'affranchir que sous l'action des « consciences exceptionnelles qui auront réussi à renverser le sens même dans lequel est orientée la pensée humaine », consciences parmi lesquelles il fait une place à part à SOCRATE, dont la méthode « rendait possible la science positive », et à DESCARTES, avec qui la science positive « est née ». L. G.

Goblot, Edmond. La logique des jugements de valeur; théorie et applications. II + 209 p., A. COLIN, Paris, 1927. ISIS

Cet ouvrage consiste en une suite au *Traité de logique* (*Isis*, 3, 306; 4e éd. 1925). L'auteur y applique aux jugements de valeur qu'il ramène à trois types (les perfections, les moyens, les fins), sa méthode d'analyse, de dissection, des raisonnements. Déjà, dans un livre publié en 1925 : la Barrière et le Niveau (F. ALCAN, édit), il avait présenté une suite d'exercices logiques sur des jugements de valeur; de ces exercices et de ceux que renferme le présent volume (pp. 111 à 220), il dégage une théorie logique qu'il n'avait fait qu'esquisser au Traité de logique (pp. 368-75). Au point de vue plus particulier de l'histoire de la pensée, je signale ses études des doctrines de PLATON, de DESCARTES, de BENTHAM, de KANT, et l'exercice sur la théorie de la valeur de KARL MARX pour qui il se montre particulièrement sévère. L. G.

20. —MATHEMATICS.

Ball, W. W. Rouse. Histoire des mathématiques. Édition française revue et augmentée, traduite sur la troisième édition anglaise par Lieut. L. FREUND. Tome I : Les mathématiques dans l'antiquité : les mathématiques au moyen âge et pendant la renaissance; les mathématiques modernes de DESCARTES à HUYGENS. VII + 338 p., 9 pl. Paris, J. HERMANN, 1927. ISIS

Ball, W. W. Rouse. Compendio di storia delle matematiche. Versione dall'Inglese con note, aggiunte e modificazioni dei dri. DIONISO GAMBIOLI e GIULIO PULITI, riveduta, correta e accresciuta da GINO LORIA. 2a ed., X + 288 + 464 p., ZANICHELLI, Bologna, 1927. ISIS

Cette seconde édit. de la traduction italienne de l'histoire des mathématiques de BALL, qui s'orne d'un portrait de l'auteur et d'une très brève notice nécrologique (v. *Isis*, 8, 321-4) diffère très peu de la première (*Isis*, 1, 561-2), faite sur la troisième édit. anglaise. On y retrouve une notice de G. PULITI sur l'école pythagoricienne, et les appendices, un peu accrus, consacrés par D. GAMBIOLI à quelques mathématiciens français (11 p.), à des mathématiciens italiens (160 p.) et aux historiens italiens des mathématiques (12 p.). G. LORIA y a ajouté quelques notices sur des savants italiens morts tout récemment, et sur F. KLEIN. — GAMBIOLI ne conserve pas toujours la sérénité dont ne devrait jamais se défaire l'historien (t. II, pp. 285-6, 339, 439-40). L. G.

Barbarin, Paul. La géométrie non euclidienne. Troisième édition suivie de notes sur la géométrie non euclidienne dans ses rapports avec la physique mathématique, par A. BUHL. (Collection *Scientia*, no. 15). 176 p., 7 pl. Paris, GAUTHIER-VILLARS, 1928. ISIS

First and second editions, 1902 and 1907.

Bortolotti, Ettore. Le matematiche disfide, e la importanza che esse ebbero nella storia delle scienze. *Atti della Società Italiana per il progresso delle scienze*, XV riunione, Bologna; 20 p., Pavia, 1927. ISIS

Account of mathematical challenges, pointing out their historical importance. G. S.

Datta, Bibhutibhusan. On the origin and development of the idea of « per cent ». *American mathematical Monthly*, 34, 530-31, 1927. ISIS

Notes on this idea in India and China.

Dieck, W. Durch Mathematik zur Philosophie. (*Der mathematische Gedanke*, Nr. 4). Sterkrade, W. OSTERKAMP, 1927. ISIS

Zeigt die Verwendung, die PLATON der Mathematik in seinem System hat zu teil werden lassen. Zuerst wird ein Kapitel aus der Einleitung des THEON VON SMYRNA abgedruckt,dann mehrere Abschnitte aus dem Platonischen Dialog Theaitetos. Alles mit einfachen Erläuterungen des Verf. versehen, der öfter auf die Fiktionslehre VAIHINGERS, die er « Widerspruch im Richtigen » nennt (*Isis*, 10, 254), bezug nimmt. H. W.

Dupont, Paul. Les géométries euclidiennes et non-euclidiennes, et l'espace physique. *Revue philosophique*, 52, 74-102, 1927. ISIS

Eisenhart, Luther Pfahler. Non-Riemannian geometry. (*American Mathematical Society, Colloquium publications*, vol. 8) VIII + 184 p. New York, American Mathematical Society, 1927. ISIS

Contents : 1. Asymmetric connections; 2. Symmetric connections; 3. Projective geometry of paths; 4. The geometry of sub-spaces. G. S.

Gibson, G. A. Sketch of the history of mathematics in Scotland to the end of the 18th century. Part II., *Proceedings of the Edinburgh Mathematical Society*, series 2, vol. 1, part 2, March, 1928, pp. 71-93. ISIS

We have already referred to the first part of this historical sketch dealing with the mathematics at the four Scotch Universities, which were all founded before 1600 : St. Andrews (1411), Glasgow (1450), Aberdeen (1495), and Edinburgh (1582). The work of NAPIER, JAMES and DAVID GREGORY was discussed in Part I. Part II is devoted mainly to the work of ROBERT SIMSON (1687-1768), JAMES STIRLING (1692-1770), COLIN MACLAURIN (1698-1746), MATTHEW STEWART (1717-1785), WILLIAM TRAIL (1764-1831), and JOHN PLAYFAIR (1748-1819). R. C. A.

Laurês, Clément. Les bases de la géométrie et de la physique. L'invariance de l'espace euclidien. 125 p., ill. Paris, A. BLANCHARD, 1928 (15 frs.) ISIS

L'auteur croit avoir trouvé de nombreuses démonstrations du cinquième postulat d'EUCLIDE et être ainsi à même de révéler les erreurs grossières de LOBACHEVSKII et d'EINSTEIN ! G. S.

Lebesgue, Henri. Sur le développement de la notion d'intégrale. *Revue de métaphysique et de morale*, 34, 149-167, 1927. ISIS

Luckey, P. Zur Geschichte der Nomographie. *Zeitschr. f. mathem. u. naturw. Unterr.* 58, 455-465, 3 text fig. 1927. ISIS

Brief history of the subject which had been prepared for the author's recent textbook : Nomographie, prakt. Anleitung zum bewerten graph. Rechentafeln (*Math. phys. Bibl.*, 59-60), but had to be left out because of the lack of space. Nomography is in a way a very young branch of mathematics (its name was coined by M. D'OCAGNE), yet the Greeks were already using nomographic methods and the astrolabe was a nomogram. G. S.

Malsch, Fritz. Geschichte der Mathematik. (*Wissenschaft und Bildung*, 242). 115 p., 40 fig. in text, 15 pl. Leipzig, QUELLE and MEYER, 1928. ISIS

Reviewed by EDMUND HOPPE, *Deutsche Literaturzeitung*, 484-6, 1928.

Miller, George Abram. Laws relating to mathematical operations. *Science*, 67, 104, 1928. ISIS

Mordell, L. J. The present state of some problems in the theory of numbers. *Nature*, 121, 138-40, 1928. ISIS

Neugebauer, O. Zur Entstehung des Sexagesimalsystems. *Abh. Ges. Wiss.*, Göttingen (Math. phys. Kl.) N. F., Bd. 13, 1. 55 S. Berlin, WEIDMANN, 1927. ISIS

Wie der Verfasser selbst sagt, existiert eine umfangreiche Literatur über

dieses Thema, die der Polemik nicht ermangelt. Verfasser kennt sie wohl, hat sie aber nicht berücksichtigt. Denn, was viel besser ist, er unternimmt eine neue Untersuchung vom Grund aus. Gestützt auf die sumerischen Texte (mit Unterstützung durch den Spezialforscher P. A. DEIMEL, S. J., in Rom) hat er die frühesten Verwendung des Sexagesimalsystems nachgespürt und diese, wie natürlich, in der Metrologie gefunden. An die astronomische Hypothese glaubt er aus Grunden, die auch mir einleuchten, nicht. Bei den Massen boten sich als « natürliche » Einteilungen die Zahlen 1/3, 1/2, 2/3, 1, 10. Als eine Erweiterung nötig wurde, wurde die Einteilungsreihe « geändert », d. h. nach unten und oben ergänzt. Da bot sich 60 als die geeignetste Grundlage. Natürlich ist das auch eine Theorie, die sich aber auf die zahlreichen Tatsachen der Metrologie stützt. Ich halte diese Entstehung des 60er Systems für durchaus wahrscheinlich. Das sexagesimale Zahlensystem löste sich schliesslich von der Metrologie los, blieb aber immer, bes. in der Praxis, mit dem alten Dezimalsystem verbunden. Auf zahlreiche Einzelheiten kann ich nicht eingehen. Doch will ich noch die Existenz eines Minuszeichens erwähnen (S. 8), und die (im Anschluss an KAYE auch schon von mir ausgesprochene) Vermutung, dass die Inder von den Babyloniern (vielleicht schon von den Sumerern !) lernten. (cfr. E. HOPPE, *Isis*, 11, 491.) H. W.

Pasquier, Louis Gustave du. Le calcul des probabilités, son évolution mathématique et philosophique. XXI + 304 p. Paris, J. HERMANN, 1926. ISIS

Reviewed by F. A. FORAKER, *American Mathematical Monthly*, 35, 31-32, 1928.

Richard, J. La géométrie au point de vue concret. *Revue de métaphysique et de morale*, 34, 337-51, 1927. ISIS

Rosenfeld, L. Le problème logique de la définition des nombres irrationnels. *Isis*, 9, 345-358, 1927. ISIS

Analyse logique, tenant compte de l'évolution historique et conduisant à un critère permettant de caractériser au point de vue logique, toute théorie arithmétique des nombres irrationnels. G. S.

Tannery, Paul (1843-1904). Mémoires scientifiques publiés par J. L. HEIBERG et H. G. ZEUTHEN. VI. Sciences modernes (1883-1904), édité par GINO LORIA. XXIV + 608 p., 5 pl. Toulouse, E. PRIVAT, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 472-6, 1927.

21. — STATISTICS.

(History and methods. Tables and generalities. For the applications, refer to the sciences to which they are applied).

Darmois, Georges. Statistique mathématique. Préface de MICHEL

HUBER. XXIV + 365 p., 29 fig., avec tables détaillées des matières et tableaux numériques. Paris, G. DOIN, 1927. ISIS

Reviewed by R. DE MONTESSUS DE BALLORE, *Revue générale des Sciences*, 39, 182, 1928.

III. PHYSICAL SCIENCES

(Knowledge of inorganic nature).

22. — MECHANICS.

(*Including celestial and atomical mechanics*).

Birkhoff, George D. Dynamical systems. (*American Mathematical Society, colloquium publications*, vol. 9). VIII + 295 p. New York, American Mathematical Society, 1927. ISIS

1. Physical aspects of dynamical systems : 2. Variational principles and applications ; 3. Formal aspects of dynamics; 4. Stability of periodic motions; 5. Existence of periodic motions; 6. Application of POINCARÉ's geometric theorem; 7. General theory of dynamical systems; 8. The case of two degrees of freedom; 9. The problem of three bodies.

Born, Max. The mechanics of the atom. Translated by J. W. FISHER and revised by D. R. HARTREE. (*International Text-books of exact science*). XVI + 317 p. London, G. BELL, 1927. ISIS

Reviewed in *Nature*, 120, 324-325, 1927.

Lipsius, Friedrich Reinhard. Wahrheit und Irrtum in der Relativitätstheorie. 154 p. Tübingen, J. C. B. MOHR, 1927. ISIS

Reviewed by KURT GRELLING, *Deutsche Literaturzeitung*, 2564-2568, 1927. « Die Relativitätstheorie ist gewiss keine rein physikalische Theorie, sondern beruht ganz wesentlich auf bestimmten philosophischen Voraussetzungen, z. B. auf dem Satz, dass prinzipiell unverifizierbare physikalische Aussagen sinnlos sind u. a. m. Man kann daher den Philosophen nicht das Recht abstreiten, diese philosophischen Bestandteile der Theorie zu kritisieren. An und für sich wäre auch nichts dagegen zu sagen, dass ein Philosoph auch die mathematisch-physikalischen Bestandteile der Theorie kritisierte. Nur muss er sich dann der Methode bedienen, die nun einmal in der Physik seit NEWTON unentbehrlich ist : der mathematischen Rechnung. Es hat keinen Zweck physikalische Hypothesen aufzustellen und in Worten zu diskutieren, wenn man sie nicht mathematisch formulieren und ihre Konsequenzen rechnerisch verfolgen kann. Da LIPSIUS das nicht tut, ist seine Kritik zur Unfurchtbarkeit verurteilt. »

Metz, André. Le principe d'inertie : son histoire et son interprétation d'après EMILE MEYERSON. *Revue générale des sciences*, 37, 209-212, 1927. ISIS

Article extrait de l'ouvrage Une nouvelle philosophie scientifique, le Causalisme de M. EMILE MEYERSON, par A. METZ, (*Isis*, 11, 149).

Reichenbach, Hans. Philosophie der Raum-Zeit-Lehre. 373 p. Berlin und Leipzig, WALTER DE GRUYTER, 1928. ISIS

Reviewed by ALB. EINSTEIN, *Deutsche Literaturzeitung*, 19-20, 1928.

Russell, Bertrand. Das ABC der Relativitätstheorie. Uebersetzt von KURT GRELLING. 260 S. München, Drei-Masken Verlag, 1928. ISIS

23. — ASTRONOMY.

Baillaud, Benjamin. L'observatoire de Paris et les observatoires français. *Revue scientifique*, 257-67, 293-302, 14 mai, 28 mai, 1927. ISIS

Bigourdan, Guillaume. Sur quelques anciennes stations astronomiques du Sud-Est de la France, entre les Alpes et le Rhône. C. r. 58e Congrès des Sociétés Savantes, p. 21-37, Paris, 1925. ISIS

Bigourdan, Guillaume. Le Bureau des longitudes. Son histoire et ses travaux, de l'origine (1795) à ce jour. 72 p., 4 fig. *Annuaire du bureau des longitudes*, Supplément A, 1928. ISIS

Boccardi, Jean. Les idées modernes relativement aux comètes. *Revue générale des sciences*, 39, 69-71, 1928. ISIS

Boccardi, Jean. La valeur des anciennes observations dans l'astronomie. *Revue générale des sciences*, 38, 699-702, 1927. ISIS

« La conclusion de cet article est que la valeur des anciennes observations astronomiques n'est pas grande et qu'elle va toujours en diminuant. »

Boll, Franz (1867-1924). Sternglaube und Sterndeutung. Die Geschichte und das Wesen der Astrologie. Unter Mitwirkung von CARL BEZOLD (1859-1923). Dritte Auflage nach des Verfassers Tod herausgegeben von W. GUNDEL. XII + 211 S., 48 Abb. im Text, 20 Tafeln sowie einer Sternkarte. Leipzig, TEUBNER, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 476-7, 1927.

Boutaric, A. La cosmologie dualiste et tourbillonnaire. *Scientia*, 40, 345-356, 1926. ISIS

Cajori, Florian. Four old astronomical observatory buildings. *Scientific Monthly*, 26, 372-376, 1928. ISIS

These four observatories are: the Observatory at Bogota, 1803 (the earliest

permanent observatory building in America), the Copenhagen Observatory 1642, the Paris Observatory 1667, the Greenwich Observatory, 1675.

Cajori, Florian. Comparison of methods of determining calendar dates by fingers reckoning. *Archeion, arch. di storia d. sc.*, 9, 31-42, 5 fig., 1928. ISIS

BÈDE LE VÉNÉRABLE s'occupe déjà de la détermination des dates du calendrier au moyen des doigts, mais sans explication. Les premières indications sur le sujet se trouvent dans une carte de navigation d'auteur inconnu (1384), actuellement au British Museum, dont CAJORI examine la méthode et reproduit les trois mains qui y figurent. Nouvelle indication dans le *Computus manualis* de MAGISTER ANIANUS (XIII^e^ s.); puis dans un *Regra geral pera aprender a tira pola mão as festas mudaveis* (Lisboa, 1570), de GONÇALO FERNANDEZ TRANQUOSO; enfin chez BUENAVENTURA FRANCISCO DE OSSORIO dont CAJORI a déjà fait l'objet d'une étude publiée ici-même (8, 325-7). Les quatre auteurs emploient la main gauche; mais l'anonyme de 1384 ne se sert pas de lettres dominicales, ANIANUS n'inscrit sur sa main ni les nombres d'or, qu'emploie F. TRANQUOSO, ni les épactes, dont se sert F. DE OSSORIO. L. G.

Fotheringham, Rev. David Ross. The date of Easter and other Christian festivals. XV + 56 p. London, S. P. C. K., 1928. ISIS

Gunther, R. T. The astrolabe : its uses and derivatives. *The Scottish Geographical Magazine*, 43, 135-147, May 16, 1927. ISIS

A propos of certain instruments in the collection of the University of St. Andrews, GUNTHER suggests that « the astrolabe or one of its derivatives was the surveying instrument employed » in the construction of detailed topographical maps of England in the sixteenth century. The theodolite is a derivative of the astrolabe. J. K. W.

Jeans, J. H. The wider aspects of cosmogony. *Nature*, 121, 463-470, 3 fig., 1928. ISIS

Reichenbach, Hans. Von KOPERNIKUS bis EINSTEIN : der Wandel unseres Weltbildes (*Wege zum Wissen*, Band 85). 122 p. Berlin, ULLSTEIN, 1927. ISIS

Rouch, Jules. Les signes du zodiaque dans l'art décoratif. *Revue générale des sciences*, 39, 101-105, 1928. ISIS

Schnippel, Emil. Die englischen Kalenderstäbe. (*Beitr. zu Engl. Philol.*, H. 5) 111 p. Leipzig, B. TAUCHNITZ, 1926. ISIS

Reviewed by F. HOLTHAUSEN, *Deutsche Literaturzeitung*, 624, 1928.

Sitter, W. de. On the rotation of the earth and astronomical time. *Nature*, 121, 99-106, 1928. ISIS

24. — PHYSICS.

Bachelard, Gaston. Étude sur l'évolution d'un problème de physique : la propagation thermique dans les solides. 183 p. Paris, J. VRIN, 1928. ISIS

Boutaric, Augustin. La physique moderne et l'électron. 268 p., 45 fig. (*Nouvelle collection scientifique.*) Paris, ALCAN, 1927. ISIS

Exposé des connaissances actuelles sur l'électron, les sources d'électron, le rôle de l'électron en électrostatique, dans les théories de la lumière, des métaux, du magnétisme, en physique cosmique, et les applications de l'électron; rayons X, piles photo-électriques, etc. (l'auteur oublie de mentionner les essais de télévision). Bibliographie sommaire. L'ouvrage ne fait pas double emploi avec l'Electron, de R. A. MILLIKAN (*Isis*, 9, 572). L. G.

Bridgman, Percy Williams. The logic of modern physics. XIV + 228 p. New York, MACMILLAN, 1927. ISIS

Reviewed by HAROLD JEFFREYS, *Nature*, 121, 86-7, 1928.

Broglie, Louis de. Deux conceptions adverses sur la nature de la lumière et leur synthèse possible. *Scientia*, 47, 128-134, 1927. ISIS

Crew, Henry. The rise of modern physics. A popular sketch. XV + 356 p., 24 pl., ill. Baltimore, WILLIAMS and WILKINS, 1928. ($ 5). ISIS

CREW's history of physics had long been expected, and its appearance will make the teaching of the subject easier in English speaking countries. It is now possible to refer young students to three or four books : F. CAJORI's History of Physics (New York, 1899); IVOR B. HART's Makers of Science, Mathematics, physics, astronomy (Oxford 1923; *Isis*, 6, 241); DOROTHY M. TURNER's Makers of Science. Electricity and magnetism (Oxford 1927; *Isis*, 10, 266) and finally CREW's history. I am not prepared to say that any of these volumes or the four of them satisfy me entirely. I still think that the needs of the elementary student have not yet been completely filled and that there is still room for a one or two volume history of physics, as comprehensive as CAJORI's or SMITH's history of mathematics. However, CREW's book will be very useful. The author has had an excellent idea. Realizing that it was not possible to explain the complete development of physics within the compass of a relatively small volume, he deliberately chose to omit almost entirely certain branches (e. g., sound, hydraulics) and to lead the reader as promptly as possible to some of the latest developments. The majority of modern physicists are investigating feverishly sprectral and atomic structures. CREW thought with reason that what the average student would wish most was a rapid introduction to this very subject. Obviously his book is the fruit of his own teaching, and on this account it will recommend itself to other teachers. It is divided into 12 chapters as follows : 1. Introduction; 2. Greek and Roman science; 3. Arabian physics; 4. Physics in the Middle Ages — science in the hands of the clergy; 5. The birth of modern physics — the great trio; 6. Refraction, dispersion and the nature of light;

7. The pioneers in electricity and magnetism; 8. Discovery of the nature of heat; 9. The discrete nature of matter; 10. From VOLTA to OERSTED; 11. Electromagnetism; 12. The rise of modern spectroscopy. Typically enough the last chapter is the longest of the whole work (48 p.), being longer than the complete account of Greek and Roman science and even than the history of electromagnetism. This is all right if one considers the author's purpose, a purpose frankly set forth by the very title. Indeed this is not a history of physics, but a historical introduction to modern physics. There is a fine series of portraits, some of which were new to me. G. S.

Fleming, J. A. A hundred years of electrical engineering : an address delivered at University College on Tuesday, June 14, 1927. 31 p. London, University of London Press, 1927. ISIS

Goodman, Herman. Story of electricity and a chronology of electricity and electrotherapeutics. Electricity Number of *Medical Life*, 34, 576-626, 12 illustrations, November 1927. ISIS

Haas, Arthur Erich. Objective and human physics. *Science*, 66, 463-469, 1927. ISIS

Hart, Ivor B. The great physicists. VI + 138 p. London, METHUEN, 1927. ISIS

Hoppe, Edmond. Histoire de la physique. Traduit de l'allemand par HENRI BESSON. 671 p. (Bibliothèque scientifique). Paris, PAYOT, 1928. ISIS

Original German edition, 1926, reviewed in *Isis*, 9, 571.

Lodge, Sir Oliver. A century's progress in physics : an address delivered at University College, on Monday, March 14, 1927. 36 p. London, University of London Press, 1927. ISIS

Lorentz, Hendrik Antoon. (1853-1928) Theorie der Strahlung. Bd. 1, X + 81 p. Leipzig, Akad. Verlagsgesellschaft, 1927. ISIS

Planck, Max. La nature de la lumière. 29 p. Paris, ALBERT BLANCHARD. 1927. ISIS

Rey, Abel. Le retour éternel et la philosophie de la physique. 320 p. Paris, FLAMMARION, 1927. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 477-9, 1927.

25. — CHEMISTRY, PHYSICO-CHEMISTRY, INDUSTRIAL CHEMISTRY.

Collie, J. Norman. A century of chemistry at University College :

an address delivered on Tuesday, June 28, 1927. 35 p. London, University of London Press, 1927. ISIS

Crane, Evan Jay; and **Patterson, Austin M.** A guide to the literature of chemistry. IX + 438 p., illus. New York, JOHN WILEY, 1927. ISIS

Davis, Tenney L. F. J. MOORE, historian of chemistry. *Industrial and Engineering chemistry*, 19, 1066, September 1927. ISIS

Brief biographical account with portrait. F. J. MOORE, 1867-1926, was a foundation member of the History of Science Society. T. L. D.

Foster, William. The romance of chemistry. XVI + 468 p., 31 pl. London, ALLEN and UNWIN, 1927. ISIS

Langeveld, L. A. Alchemisten en Rozekruisers. A. HOOIBERG, Epe, 1926. ISIS

Reviewed by F. M. G. DE FEYFER, *Bijdragen tot de geschiedenis der geneeskunde*, 8, 75, 1928.

Lippmann, E. O. von. Modifikationen des Rohrzuckers. *Chemiker-Zeitung*, Nr. 90, 1927; reprint, 2 p. ISIS

Ruska, Julius. Tabula Smaragdina. Ein Beitrag zur Geschichte der hermetischen Literatur (*Arbeiten aus dem Institut für Geschichte der Naturwissenschaft*, 4). VII + 248 S., Heidelberg, WINTER, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 375-77, 1927.

Sidgwick, Nevil Vincent. The electronic theory of valency. XII + 310 p. Oxford, Clarendon Press, 1927. ISIS

Reviewed by T. M. LOWRY, *Nature*, 121, 527-31, 1928.

Smith, Edgar Fahs (1854-1928). Old chemistries. XI + 89 p., 31 pl. New York, MCGRAW-HILL Book Co., 1927. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 479-480, 1927.

Walden, Paul. Aus der Naturgeschichte chemischer Ideen. Modernes im Spiegel der Vergangenheit. *Z. f. angew. Chemie*, 40, 637-644, 1927. ISIS

Reviewed by PAUL DIERGART, *Mitt. zur Geschichte der Medizin*, 27, 20-21, 1928.

26. — TECHNOLOGY.

(*For mining, see* 32. *geology*; *for industrial chemistry*, 25. *chemistry*. *See also Arts and Crafts, under* 45).

Ashton, Thomas S. Iron and steel in the industrial revolution. 266 p., plates. Manchester University Press, 1924. ISIS

Reviewed by CECIL H. DESCH, *Isis*, 9, 133-4, 1927.

Feldhaus, Franz M. Ruhmesblätter der Technik. Von den Urerfindungen bis zur Gegenwart. Zweite vermehrte und verbesserte Auflage. 2 Teile in 1 Bd. Mit 1 Titelbild und zus. 420 Abb., XI + 292 p.; 310 p. Leipzig, FRIEDRICH BRANDSTETTER, 1924-26. (Mk. 18) ISIS

Reviewed by CARL VON KLINCKOWSTROEM, *Isis*, 9, 378-380, 1927.

Kaempffert, Waldemar. Bahnbrechende Erfindungen in Amerika und Europa. Geschichte ihrer Entstehung und ihrer Schöpfer. Autorisierte Uebertragung der amerikanischen Ausgabe, ergänzt um die neuesten Erfindungen von HANS KLOPSTOCK. 430 p., 230 fig. Berlin, RUDOLF MOSSE, 1927. ISIS

Reviewed in *Mitt. zur Geschichte der Medizin*, 27, 18, 1928, by R. WINDERLICH.

Quervelle, Pierre Marie. Les LE PAUTE. *Larousse Mensuel*, Février 1928, 635-36, 5 portraits. ISIS

Biographical sketches of various members of a famous French family, who were clock makers to the Court from LOUIS XV to NAPOLEON III. JEAN ANDRÉ LE PAUTE (1720-89), M^me^ JEAN-ANDRÉ LE PAUTE (1723-88), JEAN-BAPTISTE LE PAUTE (1727-1802), PIERRE-HENRY LE PAUTE (1745-1806), PIERRE-BASILE LE PAUTE (1750-1843), PIERRE-MICHEL LE PAUTE, GABRIEL-JOSEPH LE PAUTE, JACQUES LE PAUTE DE BELLEFONTAINE, JEAN-JOSEPH LE PAUTE, JOSEPH LE PAUTE DAGELET (1751-1788), JEAN-JOSEPH LE PAUTE (1768-1846), AUGUSTIN HENRY, petit-fils LE PAUTE (1800-1885). An exhibition of their clocks was organized in the summer of 1927 at the Malmaison. G. S.

Wiborg, Frank Bestow (*editor*). Printing ink. A history. With a treatise on modern methods of manufacture and use. XX + 299 p., 10 illustrations. New York, HARPERS, 1926. ISIS

Reviewed by GEORGES SARTON, *Isis*, 9, 134-8, 1927.

IV. BIOLOGICAL SCIENCES
(Knowledge of organic nature).

27. — BIOLOGY (*generalities*, « *Natural history* »).

Bounhiol, Jean Paul. La vie; préface de LOUIS JOUBIN. 332 p., *Bibl. de philos. scientif.*, E. FLAMMARION, Paris, 1927. ISIS

L'essai de synthèse que consacre à la vie J. P. BOUNHIOL est essentiellement basé sur la notion de débit énergétique, donc sur la fonction d'oxydation. Vieillissement des individus, des lignées, des espèces, variations périodiques, migrations, hibernations, associations biologiques spontanées ou provoquées, fécondation, etc., sont sous la dépendance directe des modifications de l'oxydation, elle-même influencée par des facteurs secondaires tels que les variations du champ électrique terrestre. Et l'évolution elle-même, dominée par les lois physico-chimiques des équilibres, ne peut s'accomplir que dans le sens de la dégradation énergétique, d'où le rapetissement des individus, le raccourcissement des cycles vitaux, la fixation, mais aussi la constitution d'associations biologiques, et de parasitismes de plus en plus compliqués. Il y a dans ce livre bien des points de vue nouveaux, mais en ramenant ainsi tout à des oxydations, est-on sûr de ne rien oublier ? L. G.

Devaux, Emile. Les facteurs de l'état adulte et le problème des allures de développement. *Revue générale des sciences*, 39, 170-174, 1928. ISIS

Haldane, J. B. S. and **Huxley, Julian.** Animal biology. (*Clarendon Science Series*). XVI + 344 p. London, Oxford University Press, 1927. ISIS

Reviewed in *Nature*, 121, 371-3, 1928.

Hirsch, G. Chr. (*editor*). Index biologorum : investigatores, laboratoria, periodica. Editio prima. IV + 545 p. Berlin, SPRINGER, 1927. ISIS

Martonne, Emmanuel de. Traité de géographie physique. Tome III. Biogéographie, en collaboration avec A. CHEVALIER et L. CUÉNOT. Nouvelle édition entièrement refondue et considérablement augmentée. 464 p., 94 fig., 24 photogr., Paris, A. COLIN, 1927. ISIS

Reviewed in *Revue générale des sciences*, 38, 617, 1927.

Rignano, Eugenio. Das Leben in finaler Auffassung. Autorisierte deutsche Ausgabe von PAUL Graf THUN-HOHENSTEIN. (*Abhandlungen zur theoretischen Biologie*, herausg. von JULIUS SCHAXEL, Heft 26). IV + 35 p., Berlin, GEBRÜDER BORNTRAEGER, 1927. ISIS

Robson, G. C. The species problem : an introduction to the study of evolutionary divergence in natural populations. (*Biological Mono-*

graphs and Manuals, no. 8) VII + 283 p. Edinburgh, OLIVER and BOYD, 1928. ISIS

Varigny, Henry de. Essais sur la mort. 1. La mort et la biologie. 2. La mort et le sentiment. 2 vols. 309, 349 p. Paris, ALCAN, 1926-27. ISIS

Reviewed by LOUIS BRUNET, *Revue générale des sciences*, 38, 554, 1927.

28. — BOTANY.

(*Agronomy, Phytopathology, Palaeobotany.*)

Albion, Robert Greenhalgh. Forests and sea power; the timber problem of the Royal Navy 1652-1862. XV + 485 p., maps, diagr., illus., bibliogr., index. (*Harvard Economic Studies*, vol. 29). Cambridge, Harvard University Press, 1926. ISIS

Reviewed by LAWRENCE S. MAYO, *Geographical Review*, 341-2, 1928.

(British Museum). Guide to an exhibition of manuscripts and printed books illustrating the history of agriculture. 30 p., 8 pl. London, British Museum, 1927 (out of print). ISIS

Budge, Sir E. A. Wallis. The divine origin of the craft of the herbalist. XII + 96 p., 13 illust. London, Society of Herbalists, 1928. ISIS

Douglass, A. E. Climatic cycles and tree-growth. A study of the annual rings of trees in relation to climate and solar activity. Vol. 2. VIII + 166 p., 9 pl., 19 fig. Washington, Carnegie Institution, (Publication no. 289), 1928. ISIS

Gager, C. Stuart. Wellesley college and the development of botanical education in America. *Science*, 67, 171-178, 1928. ISIS

Maurizio, A. Die Geschichte unserer Pflanzennahrung von den Urzeiten bis zur Gegenwart. 480 p., 90 Textfig., 1 pl. Berlin, PAREY, 1927. ISIS

Seebohm, Mabel E. (M. E. Christie). The evolution of the English farm. 376 p., illus. Cambridge, Harvard University Press, 1927. ISIS

Reviewed by N. NEILSON, *American Historical Review*, 33, 382-383, 1928.

29. — ZOOLOGY.

Archiv für Fischereigeschichte. Heft 10. Dezember 1926. Her ausgegeben im Auftrage des Deutschen Fischerei-Vereins vo-

WILHELM KOCH. VI + 114 p. Berlin, Verlag des Deutschen Fischerei-Vereins, 1926. ISIS

Reviewed by R. ZAUNICK, *Mitt. zur Geschichte der Medizin*, 26, 313, 1927.

Burrell, Harry James. The platypus : its discovery, zoological position, form and characteristics, habits, life history, etc. IX + 227 p., 35 pl. Sydney N. S. W., ANGUS and ROBERTSON, 1927. ISIS

Reviewed in *Nature* by J. T. W., 120, 797-8, 1927.

Chapman, Royal Norton. Animal ecology; with especial reference to insects. Second edition. IX + 183 p. Minneapolis, Minn., BURGESS-BROOKE, 1925. ISIS

Reviewed by J. G. MYERS, *Nature*, 121, 274-5, 1928.

Frisch, Karl von. Aus dem Leben der Bienen. X + 149 p. Berlin, SPRINGER, 1927. ISIS

Reviewed by P. SCHULZE, *Deutsche Literaturzeitung*, 449, 1928.

Grey, Zane. Tales of swordfish and tuna. 215 p. London, HODDER and STOUGHTON, 1927. ISIS

Haviland, Maud Doria (Mrs. **H. H. Brindley**). Forest, steppe and tundra; studies in animal environment. VIII + 218 p., 8 pl. Cambridge, University Press, 1926. ISIS

Reviewed by L. CUÉNOT, *Revue générale des sciences*, 38, 586, 1927.

Laufer, Berthold. The giraffe in history and art. 100 p., 9 plates in photogravure, 23 text-figures, and 1 vignette. (*Anthropology Leaflet* 27). Chicago, Field Museum of Natural History, 1928. ISIS

A very learned yet very delightful monograph divided as follows : Giraffes. In ancient Egypt. Representations in Africa. Among Arabs and Persians. In Chinese records and art. In India. Among the ancients. At Constantinople. During the Middle Ages. In the age of the Renaissance. In the nineteenth century and after. The oldest representations of giraffes in the world are probably prehistoric rock carvings found by BREASTED in Lower Nubia (fig. 5). The giraffe was not known to the ancient Hebrews as was formerly believed, because of a wrong interpretation of Deuteronomy 14,5, by the Greek translators. Neither was it known to the ancient Chinese. It was introduced into China only in the fifteenth century. « Ten giraffes appeared in the circus of Rome in A.D. 247 under the emperor GORDIANUS III to take part in the celebration of the first millennium that had elapsed since the foundation of Rome. This was the largest number of live giraffes ever brought together at any time. » This excellent paper is completed by a critical bibliography, but the equally indispensable index is unfortunately missing. G. S.

Roule, Louis. Les poissons et le monde vivant des eaux. Études

ichthyologiques. Tome second : La vie et l'action. 380 p., 52 fig. in text, 16 pl. after the watercolors of ANGEL. Paris, DELAGRAVE, 1927. ISIS

Reviewed by LÉON BERTIN, *Revue générale des sciences*, 38, 582-583, 1927

Stresemann, Erwin. Die Entwicklung der Begriffe Art, Varietät. Unterart in der Ornithologie. *Mitt. d. Ver. sächs. Ornithologen*, 2, 1-8, 1927. ISIS

Reviewed by R. ZAUNICK, *Mitt. zur Geschichte der Medizin*, 26, 302, 1927.

V. SCIENCES OF THE EARTH

(implying knowledge of both organic and inorganic nature).

30. — GEODESY.

Lallemand, Charles. Discours prononcé à la Séance publique annuelle du lundi 13 décembre 1926 par le Président de l'Académie des sciences. 18 p. Paris, GAUTHIER-VILLARS, 1926. ISIS

Réflexions suggérées par les problèmes généraux de géodésie. G. S.

Perrier, Général **G.** La coopération internationale en géodésie et en géophysique. Troisième assemblée générale de l'Union géodésique internationale à Prague, Septembre 1927. *Annuaire du Bureau des longitudes*, Supplément C, 120 p., 1928. ISIS

« Nous nous proposons, dans cette Notice, de rendre compte de la troisième Assemblée générale tenue à Prague en septembre dernier par l'Union géodésique et géophysique internationale, mais cet exposé gagnera certainement à être précédé d'un aperçu historique du développement de la coopération internationale dans les Sciences de la Terre, et particulièrement en Géodésie (depuis 1861). »

31. — GEOGRAPHY AND OCEANOGRAPHY.

Atkinson, Geoffroy. La littérature géographique française de la Renaissance. Répertoire bibliographique. Description de 524 impressions d'ouvrages publiés en français avant 1610 et traitant des pays et des peuples non européens, que l'on trouve dans les principales bibliothèques de France et de l'Europe occidentale. 565 p., 293 facsimilés de titres. Paris, PICARD, 1927. ISIS

(Atlas, historical). Enquête sur les atlas historiques en préparation et sur la documentation cartographique. *Bulletin of the International Committee of Historical Sciences*, I, 497-523, 1928. ISIS

Very valuable information on sources relative to the historical geography of many countries : Germany by FRITZ CURSCHMANN; Austria by OSWALD

REDLICH; Belgium by H. LAURENT; United States by J. F. JAMESON; France by J. TOURNEUR-AUMONT; Norway by EDV. BULL; Poland by WL. SEMKOWICZ; Czecho-Slovakia by J. SUSTA.

Brunhes, Jean. Géographie humaine de la France. Deuxième volume. Géographie politique et géographie du travail par JEAN BRUNHES et PIERRE DEFFONTAINES. (GABRIEL HANOTAUX, Histoire de la Nation française, t. 2) VIII + 652 p., 257 fig., 12 pl. Paris, Société de l'Histoire nationale, PLON, 1926. ISIS

Reviewed in *XXXVI^e Bibliographie géographique*, 1926, p. 163, 1927.

(Bruxelles). Liste sommaire des documents cartographiques exposés, en novembre 1926, au Palais d'Egmont, à l'occasion du Cinquantenaire de la Société Royale Belge de Géographie, à Bruxelles. *Bulletin de la Société Royale Belge de Géographie*, 50^e Année, 322-344, 1926. ISIS

This list will serve as a cartobibliography of maps of Belgium and of the work of Belgian cartographers from the sixteenth century to the present. J. K. W.

Caraci, Giuseppe. Ancora a proposito di antiche rappresentazioni cartografiche a stampa di Firenze. *La Geografia*, 15, 31-38, 1927. ISIS

Caraci, Giuseppe. Gli albori della cartografia terrestre in Inghilterra. *Rivista Geografica Italiana*, 34, 57-71, 1927. ISIS

CARACI comments on an interesting recent tendency among students of the history of geography. Whereas primary attention during the last century was focused on the « progressive expansion of our knowledge of the habitable lands and the progressive shrinking of the blank spaces on the maps », of late increasing interest has been shown in the detailed mapping of the different European countries during the « heroic age of cartography ». The present article is a critical discussion of studies that have been carried out by British scholars of the maps of the sixteenth and early seventeenth-century cartographers — particularly CHRISTOPHER SAXTON, JOHN NORDEN, and JOHN SPEED — and of a group of maps probably dating from 1602-3. The excellent quality and detail of their work presupposes a long anterior development, of which, however, little is now known. J. K. W.

Chubb, Thomas. A descriptive list of the printed maps of Norfolk, 1574-1916, with biographical notes and a tabular index by T. CHUBB, and a descriptive list of Norwich plans, 1541-1914, by GEORGE A. STEPHEN. XVI + 289 p., maps, ills., plates, plans, index. Norwich, JARROLD and SONS, 1928. ISIS

Colin, Elicio (*editor*). Association de géographes français. *XXXVI^e bibliographie géographique*. 1926, publiée avec la collaboration de :

l'American geographical society, du Comitato geografico nazionale italiano, de la Royal geographical society (London), de la Société royale de géographie d'Égypte, et avec le concours de la Fédération des Sociétés françaises de sciences naturelles. 606 p. Paris, COLIN, 1927. ISIS

The parts of main interest to us, Histoire de la géographie and Géographie historique, cover respectively 19 and 18 pages, and contain respectively 98 and 111 items. G. S.

Crouse, Nellis M. In quest of the western ocean. XIII + 480 p., maps, bibliogr., index. New York, WILLIAM MORROW, 1928. ISIS

Czibulka, Alfons von. Berühmte Weltfahrer von MARCO POLO bis SVEN HEDIN, mit ihren Reiseberichten. 485 p., ills. München, Drei Masken Verlag, c. 1926. ISIS

Selections from notable works of travel for the general reader, each preceded by a brief introduction. J. K. W.

Davies, Stephen H. Early discoveries in the northern territory. *Queensland Geographical Journal*, 40-41, p. 24-34, 1924-1926. ISIS

Notes on explorations of the coast of the northern territory between Cape Wessel and the Western Australian border from the early seventeenth century to 1849. J. K. W.

Dobrowolski, Antoni Boleslaw. Wyprawy polarne (Les expéditions polaires). XXVIII + 359 p., 85 fig., 5 pl., 2 maps. Warsaw, 1925. ISIS

« Ce livre est l'œuvre d'un membre de l'expédition de la Belgica. Dans la première partie (p. 1-142), l'auteur fait l'historique de la question, y compris les explorations jusqu'à la Guerre. La seconde partie (p. 143-359) est consacrée à la géographie des régions polaires : descriptions et considération des problèmes qui s'y posent. » ST.LENCEWICZ in *XXXVI^e Bibliographie géographique*, 1926, 561, Paris, 1927.

Dondore, Dorothy Anne. The prairie and the making of middle America : four centuries of description. XIII + 472 p., ills., bibliog., index. Cedar Rapids, Iowa, The Torch Press, 1926. ISIS

Reviewed in *The Geographical Review*, 163-4, January 1928.

Du Bus, Charles. Les collections D'ANVILLE à la Bibliothèque Nationale. *Bulletin de la section de Géographie, Ministère de l'instruction publique et des beaux-arts*, 41, 93-130, 1926. ISIS

In October 1924 the great collection of maps (now numbering 10,502) accumulated in the main by JEAN-BAPTISTE BOURGUIGNON D'ANVILLE (1697-1782) was transferred from the Department of Foreign Affairs to the Bibliothèque Nationale and thereby placed at the disposal of the public. Mon-

sieur DU BUS sketches the history of the collection, discusses some of the most interesting of the maps, and adds as an appendix a summary of the catalogue of the collection completed in 1827 by JEAN-GUILLAUME BARBIÉ DU BOCAGE, geographer of the Department. J. K. W.

Fite, Emerson D., and **Freeman, Archibald.** A book of old maps, delineating American history from the earliest days down to the close of the Revolutionary War. XV + 299 p., 74 maps, index. Cambridge Harvard University Press, 1927. ISIS

Reproductions of world maps, regional maps, plans of cities, and maps illustrating battlefields, and campaigns, all dating from between the close of the fifteenth and the end of the eighteenth centuries. Each map is accompanied by descriptive text and bibliographical references. See critical review by JAMES A. ROBERTSON in *American Historical Review*, 33, 408-410, January 1928; and in *Geographical Review*, 339-340, 1928.

Fordham, Sir **Herbert George.** Les guides-routiers, itinéraires et cartes-routières de l'Europe 1500-1850. Conférence faite le 20 avril 1926, au 167e diner de la Société Le Vieux Papier. 45 p., maps, ills., bibliogr. Lille, Imprimerie LEFEBVRE-DUCROCQ, 1926. ISIS

A strictly carto-bibliography study, valuable as establishing a basis for further researches into the history of travel in Europe. J. K. W.

Fordham, Sir **Herbert George.** The road-books of Wales. With a catalogue 1775-1850. Reprinted from *Archaeologia Cambrensis*, 276-291, 3 plates December 1927. ISIS

Fordham, Sir **Herbert George.** Hand-list of catalogues and works of reference relating to carto-bibliography and kindred subjects for Great Britain and Ireland, 1720 to 1927. 26 p. Cambridge, University Press, 1928. ISIS

Friederici, Georg. Der Charakter der Entdeckung und Eroberung Amerikas durch die Europäer : Einleitung zur Geschichte der Besiedlung Amerikas durch die Völker der alten Welt. Vol. I, XIII + 579 p. (*Allgemeine Staatengeschichte*; *Geschichte der Aussereuropäischen Staaten.*) Stuttgart-Gotha, FRIEDRICH ANDREAS PERTHES, 1925. ISIS

The present volume consists of three parts. The first and second deal respectively with the circumstances of the natural environment and the character and institutions of the aborigines as they facilitated or hindered in different ways the exploration and colonization of America. The third part is devoted to the work of the Spanish explorers ansd conquistadores. It is not a narrative of events but an analysis of movements, methods, and technique. « In the *expediciones à descubrir* sent out by the *Casa de Contratación* the author sees predecessors of the maritime scientific expeditions of the late eighteenth century. » (*Geographical Review*, vol. 18, 1928, p. 163). The

volume is scholarly and original. It presents in abundance not only facts but ideas that will not fail to stimulate the interest of every student of the history of geographical science and exploration. J. K. W.

Hettner, Alfred. Die Geographie; ihre Geschichte, ihr Wesen und ihre Methoden. VIII + 463 p. Breslau, FERD. HIRT, 1927. ISIS

Reviewed by N. KREBS, *Deutsche Literaturzeitung*, 2265-2268, 1927.

Humphreys, Arthur Lee. Old decorative maps and charts: with illustrations from engravings in the MACPHERSON collection, and a catalogue of the atlases, etc. in the collection, by HENRY STEVENS. XLIII + 51 p., 79 maps (plates), 2 ills. London, HALTON and TRUSCOTT SMITH, 1926. ISIS

A pleasing volume of reproductions (many in color), of printed maps in atlases of the sixteenth, seventeenth and eighteenth centuries. The introduction (unfortunately marred by inaccuracies) gives a brief sketch of the history of cartography, with bio-bibliographical details regarding mapmakers and their works; of especial interest to the collector. Reviewed in the *Geographical Review*, 339-40, 1928.

Iorga, Nicolae. Les voyageurs orientaux en France — Conférences données en Sorbonne (1927). *Revue historique du sud-est Européen*, 4, 1-25, 73-108, 161-203, 1927. ISIS

Deals with Turkish, Greek, and particularly with Roumanian travelers of the eighteenth and nineteenth centuries. J. K. W.

Margerie, Emmanuel de. L'œuvre des géographes français depuis cent ans. *Bulletin de la Société Royale Belge de Géographie*, 50e Année, 199-215, 1926. ISIS

Brief critique, with useful footnote references, of the work of French geographers in descriptive geography, cartography, and explanatory or interpretative geography. J. K. W.

Mörner, Graf Birger. Söderhavet. Del I. De stora färderna, Vid rikets port, Polynesien. (*De geografiska upptäckernas historia*, II.) XI + 230 p., front., 117 illus., 1 map. Uppsala, J. A. LINDBLADS Förlag, 1923. ISIS

Nordenskiöld, Erland. Sydamerika. Kampen om guld och silver, 1498-1600. (*De geografiska upptäckternas historia*). 211 p., 74 illus., 1 map. Uppsala, J. A. LINDBLADS Förlag, 1919. ISIS

Norlind, Arnold. Okeanos. *Svensk Geografisk Årsbok*, 9-21, 3 maps, 1 plate, German summary, 1927. ISIS

Short sketch of the history of various concepts that have been held since the time of the early Greeks regarding the encircling stream of Ocean, and later, regarding the oceans. J. K. W.

Rouch, Jules. Les régions polaires. 220 p. (*Nouv. collection scientifique*). Paris, ALCAN, 1927. ISIS

ROUCH ajoute à son histoire des voyages antarctiques (*Isis*, 5, 548) un ouvrage général de bonne vulgarisation sur les régions polaires. Sans prétendre être complet, il examine les questions de géodésie, de géographie, celles qui sont liées au climat, à la glaciation, aux courants, aux marées, aux phénomènes optiques, magnétiques, électriques, à la flore, à la faune et aux peuplements humains. L. G.

Ruiz Moreno, Adrián. La evolución de la cartografia argentina : su importancia actual y futura. *Gaea, Annales de la Sociedad Argentina de Estudios Geograficas*, Buenos-Aires, No. 1, 165-182, 1925. ISIS

Soulier, Paul. Géostatistique. Étude statistique du relief du sol terrestre. *Revue générale des sciences*, 39, 37-47, 1928. ISIS

32. — GEOLOGY, MINERALOGY, PALAEONTOLOGY, MINING.

(*For palaeobotany, palaeozoology and palaeoanthropology, see respectively* 28. *botany*, 29. *zoology and* 39. *prehistory*).

(Atlantis). See critical bibliography on the subject in XXXVI[e] *Bibliographie géographique*, 1926. Paris, COLIN, 1927, p. 58. ISIS

Antevs, Ernst. The last glaciation, with special reference to the ice retreat in northeastern North America. (*American Geographical Society Research Series*, no. 17) (Shaler Memorial Series). X + 292 p., 9 pl. New York, American Geographical Society, 1928. ISIS

Barrois, Charles. Discours prononcé à la Séance publique annuelle du lundi 12 décembre 1927 par le Président de l'Académie des sciences. 16 p. Paris, GAUTHIER-VILLARS, 1927. ISIS

Discussion de l'histoire de la houille. G. S.

Collet, Léon William. The structure of the Alps. Foreword by O. T. JONES. XII + 290 p., 12 pl. London, ARNOLD, 1927. ISIS

Reviewed by P. G. H. BOSWELL, *Nature*, 121, 412-414, 1928.

Du Toit, Alex. L. A geological comparison of South America with South Africa. With a palaeontological contribution by F. R. COWPER REED. (Carnegie Institution, Publication no. 381). VIII + 158 p., 16 plates, map. Washington, D. C., Carnegie Institution, 1927. ISIS

This study is mentioned here, in spite of its highly technical nature, because of its philosophical interest. Indeed it affords a very remarkable confirmation

of the hypothesis of « continental disruption » or the « displacement hypothesis » brought forward independently by F. B. TAYLOR (1910) and A. WEGENER (1912). If you have no time to read it entirely, at least look at the comparative stratigraphical table (opposite p. 16) and at the schema (p. 116) wherein the numerous congruences and coincidences in the stratigraphy and structure of Brazil and West Africa are very well shown, the two areas being brought close together. Such a schema challenges criticism, and one may refuse to accept the displacement hypothesis as the true explanation, but the geological parallelism itself cannot be denied. The author insists that it is impossible to account for these facts by postulating the existence of one or more relatively narrow « land bridges » lasting down into the early Mesozoic; there must have been some continuous land area embodying those sections of Gondwanaland that are now represented in the two continents. This memoir is completed by an elaborate bibliography and by a geological map (1 : 5.000.000) of eastern South America. The Carnegie Institution deserves our gratitude for having made possible this very valuable investigation and the publication of its results. GEORGE SARTON.

Heritsch, Franz. Die Deckentheorie in den Alpen (Alpine Tektonik, 1905-1925). (*Fortschritte der Geologie und Paläontologie*, herausgegeben von W. SOERGEL, Band 6, Heft 17). IX, p. 75-210. Berlin, Gebrüder BORNTRAEGER, 1927 ISIS

Reviewed by P. G. H. BOSWELL, *Nature*, 121, 412-414, 1928.

Hobbs, William Herbert. The cause of earthquakes, especially those of the eastern United States. Reprinted from papers of the Michigan Academy of Science, Arts and Letters, vol. 5, 1925. *Annual Report of Smithsonian Institution* for 1926, 257-277, 5 fig., Washington, 1927. ISIS

Contains a brief history of earthquake theories. G. S.

33. — METEOROLOGY, CLIMATOLOGY AND TERRESTRIAL PHYSICS.

Clayton, Henry Helm (*editor*). World weather records, collected from official sources by FELIX EXNER, Sir GILBERT WALKER, G. C. SIMPSON, H. HELM CLAYTON, ROBERT C. MOSSMAN. Published under grant from JOHN A. ROEBLING. VI + 1199 p. Washington, Smithsonian Institution, 1927. ISIS

Reviewed in *Nature*, 120, 747, 1927.

Cline, Isaac Monroe. Tropical cyclones, comprising an exhaustive study... of... features observed and recorded in sixteen tropical cyclones which have moved on gulf and south Atlantic coasts during the twenty five years 1900-1924 inclusive. XII + 13 + 301 p., maps, diagr., bibliog., index. New York, MACMILLAN, 1926. ISIS

Reviewed by OLIVER L. FASSIG, *The Geographical Review*, 175-6, January 1928.

Laughton, Carr and **Heddon, V.** Great storms. VIII + 251 p., 13 pl. London, PHILIP ALLAN, 1927. ISIS

Reviewed by E. TAYLOR, *Nature*, 121, 490-1, 1928.

VI. ANTHROPOLOGICAL AND HISTORICAL SCIENCES

(Knowledge of man, past and present).

34. — ANATOMY.

Chaine, J. Histoire de l'anatomie comparative. VI + 461 p. Bordeaux, E. DAGUERRE, 1925. ISIS

Reviewed by RAOUL M. MAY, *Isis*, 9, 480-482, 1927.

Koopman, J. Bijdragen tot de geschiedenis der ontwikkeling van de endocrinologie. II. De pijnappelklier (glandula pinealis). *Bijdragen tot de geschiedenis der geneeskunde*, 8, 96-100, 1928. ISIS

Streeter, George L. Archetypes and symbolism. *Science*, 65, 405-412, 1927. ISIS

Wiberg, Jul. The anatomy of the heart in the 16th, 17th, and 18th century (ANDREAS VESALIUS, RICHARD LOWER, and RAIMOND VIEUSSENS). *Janus*, 31, 279-85, 1927. ISIS

35. — PHYSICAL ANTHROPOLOGY.

(*Anthropometry and races of man*).

Mooney, James. The aboriginal population of America north of Mexico. (*Smithsonian Miscellaneous collections*, vol. 80, no. 7) 40 p. Washington, Smithsonian Institution, 1928. ISIS

According to the author's elaborate computations the total American Indian population north of Mexico amounted to about 1,153,000 before it suffered much disturbance from Europeans; about 1907, it was reduced to 406,000 G. S.

Taylor, Griffith. Environment and race : a study of the evolution, migration, settlement, and status of the races of man. XVI + 354 p., 6 pl., 93 fig. in text. New York, Oxford University Press, 1927. ISIS

Reviewed by R. B. DIXON, *American Historical Review*, 33, 621-2, 1928, and by A. C. HADDON, *Nature*, 121, 532-3, 1928.

36. — PHYSIOLOGY (*human and comparative*).

Hill, A. V. Living machinery : six lectures delivered before a « Juvenile auditory » at the Royal Institution, Christmas, 1926. XIV + 256 p., 24 pl. London, G. BELL, 1927. ISIS

Hill, A. V. Muscular movement in man : the factors governing speed and recovery from fatigue. (The George Fisher Baker non-resident lectureship in chemistry at Cornell University, vol. 3). VI + 104 p., 5 pl. New York, MCGRAW-HILL Book Co., 1927. ISIS

Höber, Rudolf. Physikalische Chemie der Zelle und der Gewebe. Sechste, neubearbeitete Auflage. XVI + 955 p. Leipzig, WILHELM ENGELMANN, 1926. ISIS

Reviewed in *Nature* by F. J. W. R., 120, 869-871, 1927.

Pavlov, I. P. Conditioned reflexes : an investigation of the physiological activity of the cerebral cortex. Translated and edited by G. V. ANREP. XV + 430 p. London, Oxford University Press, 1927. ISIS

Reviewed by D. DENNY-BROWN, *Nature*, 121, 662-64, 1928.

Satterlee, G. Reese. History of our knowledge of gastric digestion. *Medical Life*, 34, 645-653, 1927. ISIS

Starling, Ernest H. A century of physiology : being the first of a series of centenary addresses, delivered on Monday, February 28, 1927. 33 p. London, University of London Press, 1927. ISIS

37. — PSYCHOLOGY (*human and comparative*).

Boring, Edwin G. The problem of originality in science. *American Journal of Psychology*, 39, 70-90, 1927. ISIS

« It is my intention to remind the reader by a few 'psychologists' instances, that the 'fathers' are necessarily also 'sons' and that the 'founders' are very apt to be 'promoters' ». The instances discussed are : (1) The specific energies of nerves; (2) HELMHOLTZ' extension of the doctrine of specific energies of nerves; (3) The BELL-MAGENDIE law; (4) Localization of function in the brain; (5) The speech center; (6) Reflex movement; (7) Hypnotism and Braidism; (8) Associationism; (9) Physiological psychology; (10) Context theory of meaning; (11) Behaviorism; (12) Gestalt psychology.

« It seems to me that scientific thought is thus like the personal thinking of the scientist. The scientist has his brilliant intuitions, but the originality of the moment of insight is little more than the unexpected seeing of a relationship. Both kinds of thought are evolutionary, and their stages are marked off by the anastomosis of logical processes. Only in this somewhat artificial sense are there mutations in the evolution of thought..... My thesis is that much of the greatness that is attributed to the 'great' is an artifact and depends

upon matters that are not intrinsic to the mind of the 'great' man. We can not always evaluate the intrinsic and the extrinsic factors in a given case, but we can at least realize the problem. Moreover we can realize how small is the thought of an individual in comparison with the process to which it belongs, and we can turn our attention to the larger and more important matter of the stream of scientific thought. Could we thus even partially dehumanize science, a great deal of fruitless and really meaningless controversy about both the past and the present would be avoided. »

Lange-Eichbaum, Wilhelm. Genie, Irrsinn und Ruhm. 502 p. München, ERNST REINHARDT, 1928. ISIS

Reviewed by ERNST KRETSCHMER, *Deutsche Literturzeitung*, 740-744, 1928.

Leroy, Eugène Bernard. Les visions du demi-sommeil (hallucinations hypnagogiques). (*Bibliothèque de philosophie contemporaine*). XV + 132 p. Paris, ALCAN, 1926. ISIS

Reviewed in *Nature*, 120, 911, 1927.

Rignano, Eugenio. La teoria della forma della nuova scuola psicologica tedesca contrapporta all'associazione della scuola psicologica inglese. I. La « Gestalt » in quanto ordine di elementi sensoriali; II. La « Gestalt » in quanto unificazione di elementi sensoriali e in quanto significato d'un oggetto; III. La « Gestalt » in quanto concetto. *Scientia*, 42, 145-158, 215-29, 281-90, 1927. trad. franç., *id.*, suppl., 65-80, 99-114, 133-43. ISIS

Examen critique de la nouvelle théorie de la forme, en particulier à travers M. WERTHEIMER, W. KÖHLER, K. KOFFKA.

Schierbeek, A. Instinkt of verstand? Een inleiding tot de dierpsychologie. (Instinct or intelligence? An introduction to animal psychology). (Handboekjes elck 't beste onder leiding van L. SIMONS). 212 p., 90 fig. Uitgegeven door de Maatschappij voor Goede en Goedkoope lectuur Amsterdam, 1927. (fl. 2.50). ISIS

Well informed, clearly thought out and charmingly printed introduction to the study of animal psychology, with many illustrations and bibliographical references. It was first published serially in *Wil en weg* (Will and Way), an excellent journal of popular education; it now appears in an admirable collection of little handbooks, the existence of which is an eloquent witness of Dutch culture. The author is well known to our readers by his history of biology (Amsterdam, 1923; *Isis*, 6, 211). G. S.

39. — PREHISTORY.

Andrews, Roy Chapman. Auf der Fährte des Urmenschen. Aus dem Englischen von MAX MÜLLER. Mit einer Einführung von HENRY FAIRFIELD OSBORN. 288 p., 54 fig., 2 maps. Leipzig, BROCKAUS, 1927. ISIS

Kendrick, T. D. The druids : a study in Keltic prehistory. XIV + 227 p. London, METHUEN, 1927. ISIS

Mötefindt, H. Steinzeitliche Messer aus Kieselschiefer. *Geschichtsblätter für Technik, Industrie und Gewerbe*, 11, 262-268, 1927. ISIS

Moir, J. Reid. The antiquity of man in East Anglia. XIV + 172 p., 25 pl. Cambridge, University Press, 1927. ISIS

Reviewed in *Nature*, 121, 275-6, 1928.

Moodie, Roy L. Mastoiditis in pre-Columbian Peru. *Annals of Medical History*, 9, 357, 1927. ISIS

Moodie, Roy L. POTT's disease in early historic Peru. *Annals of Medical History*, 9, 356, 1927. ISIS

Moodie, Roy L. The study of paleopathology in France. *Annals of Medical History*, 10, 86-89, 1928. ISIS

Osborn, Henry Fairfield. Man rises to Parnassus : critical epochs in the prehistory of man. (Six lectures to the students of Princeton University, on the Louis Clark Vanuxem Foundation, 1927). XIX + 217 p., 35 pl. Princeton, N. J., Princeton University Press, 1927. ISIS

Pârvan, Vasile. Dacia : recherches et découvertes archéologiques en Roumanie. Tome I, 1924; tome 2, 1925. VIII + 368; VIII + 429 p. Bucharest, Cultura Nationala, 1927. ISIS

Elaborate review by M. ROSTOVTZEFF, *American Historical Review*, 33, 377-380, 1928.

Peake, Harold, and **Fleure, Herbert John.** Peasants and potters. (The Corridors of Time, 3). 152 p. Oxford, Clarendon Press, 1927. ISIS

Reviewed in *Nature*, 121, 375-6, 1928.

40. — ETHNOLOGY.

(*Primitive and popular science*).

Africa. *Journal of the International Institute of African Languages and Cultures. Journal de l'Institut International des Langues et Civilisations Africaines. Zeitschrift des Internationalen Instituts für Afrikanische Sprachen und Kulturen.* Edited by DIEDRICH WESTERMANN. Vol. I, Nr. 1. Oxford University Press. January 1928. ISIS

Reviewed by EUGEN MITTWOCH, *Deutsche Literaturzeitung*, 468-71, 1928.

Bakker, C. Volksgeneeskundige aanteekeningen, in en om Broek in Waterland verzameld. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 45-61, 1928. ISIS

Briffault, Robert. The mothers : a study of the origins of sentiments and institutions. In 3 volumes. Vol. 1, XIX + 781 p.; vol. 2, XX + 789 p.; vol. 3, XV + 841 p. New York, MACMILLAN, 1927. ISIS

Reviewed by B. MALINOWSKI, *Nature*, 121, 126-128, 1928.

Crawley, Alfred Ernest. The mystic rose : a study of primitive marriage and of primitive thought in its bearing on marriage. A new edition, revised and greatly enlarged by THEODORE BESTERMAN. In 2 volumes. Vol. 1, XX + 375 p.; vol. 2, VII + 340 p. London, METHUEN, 1927. ISIS

Reviewed by B. MALINOWSKI, *Nature*, 121, 128-131, 1928.

Findlay, Sir John R. Obsolete methods of reckoning time. *The Scottish Geographical Magazine*, 43, 129-135. May 16, 1927. ISIS

On the reckoning of hours on sundials, and on instruments for converting hours of one type into those of another. J. K. W.

Lenoir, Raymond. L'âme primitive. *Revue de Synthèse historique*, 44, 5-34, 1927. ISIS

Lévy-Bruhl, Lucien. L'âme primitive. Travaux de l'Année Sociologique. (*Bibliothèque de philosophie contemporaine*). 451 p. Paris, FÉLIX ALCAN, 1927. ISIS

Reviewed by R. THURNWALD, *Deutsche Literaturzeitung*, 486-494, 1928; and by H. METZGER, *Isis*, 9, 482-486, 1927.

Lévy-Bruhl, Lucien. Die geistige Welt der Primitiven. Uebertr. von MARGARETE HAMBURGER. III + 353 p. München, F. BRUCKMANN, 1927. ISIS

Reviewed by R. THURNWALD, *Deutsche Literaturzeitung*, 486-494, 1928. Original French edition, 1922, reviewed by R. LENOIR, *Isis*, 5, 467-68.

Locke, L. Leland. Supplementary notes on the quipus in the American Museum of Natural History. (*Anthropological Papers of the American Museum of Natural History*, vol. 30, part 2). p. 43-73. New York, 1928. ISIS

Completing the author's studies of 1923 and 1927 (*Isis*, 6, 219; 10, 292). He has taken the trouble to re-examine all the quipus already investigated by himself, in order to make eventually possible a checking of ERLAND NORDENSKIÖLD's hypothesis (1925; *Isis*, 8, 638) that the quipus which are found in the huacas are calendrical or astrological. G. S.

Maass, Alfred. Sternkunde und Sterndeuterei im malaischen Archipel. *Tijdschrift voor Indische Taal-, Land- en Volkenkunde*, 64, Afl. 1 en 2, p. 1-172; Afl. 3 en 4, p. 347-460, 1924; 66, Afl. 4, p. 618-670, 1926. ISIS

McKenzie, Dan. The infancy of medicine : an enquiry into the influence of folk-lore upon the evolution of scientific medicine. XIV + 421 p. London, MACMILLAN, 1927. ISIS

Radin, Paul. Primitive man as philosopher. With a foreword by JOHN DEWEY. XVIII + 402 p. London, APPLETON, 1928. ISIS

Ricketson, Oliver, Jr. Astronomical observatories in the Maya area. *Geographical Review*, 215-225, 10 fig., 1928. ISIS

Spencer, Sir **Baldwin**; and the late **F. J. Gillen.** The Arunta : a study of a stone age people. In two volumes. Vol. 1 : XXVIII + 390 p., 87 pl.; vol. 2, XVI, p. 391-646, 64 pl. London, MACMILLAN, 1927. ISIS

New edition of «The native tribes of Central Australia », published 1899. Reviewed by A. C. HADDON, *Nature*, 121, 411-412, 1928.

Wissler, Clark. The American Indian. An introduction to the anthropology of the New World. Second edition. XV + 474 p., 83 illustrations, 2 large maps. New York, Oxford University Press, 1922. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 138-142, 1927.

Wissler, Clark. The relation of nature to man in aboriginal America. XX + 248 p., 51 illustrations. New York, Oxford University Press, 1926. ISIS

Reviewed by GEORGE SARTON, *Isis*, 9, 138-142, 1927.

41. — SUPERSTITION AND OCCULTISM.

Gatterer, Alois (S. J.). Der wissenschaftliche Okkultismus und sein Verhältnis zur Philosophie. VIII + 175 p. (*Philosophie und Grenzwissenschaften*, Bd. 2, Heft 1). Innsbruck, F. RAUCH, 1927. ISIS

Reviewed by K. SUDHOFF, *Mitt. zur Geschichte der Medizin*, 26, 269, 1927.

Lehmann, Alfred. Aberglaube und Zauberei, von den ältesten Zeiten bis in die Gegenwart. Dritte deutsche Auflage, nach der zweiten umgearbeiteten dänischen Auflage übersetzt und nach dem Tode des Verfassers bis in die Neuzeit ergänzt von D. PETERSEN. I. Mit

4 Tafeln und 72 Textabbildungen. XVI + 752 S. Stuttgart, FERDINAND ENKE, 1925. ISIS

Reviewed by CARL VON KLINCKOWSTROEM, *Isis*, 9, 142-143, 1927.

Mill, Hugh Robert. Belief and evidence in water divining. *Nature*, 120, 882-884, 1927. ISIS

Montandon, Raoul. Les radiations humaines. Introduction à la démonstration expérimentale de l'existence des corps subtils de l'homme. 408 p., 99 fig. dont 26 pl. h. t., F. ALCAN, Paris, 1927. ISIS

RAOUL MONTANDON, partisan, après en avoir été un négateur, de la radiation humaine, et notamment du rayonnement magnétique, a groupé dans les six chapitres de ce volume (1. les effluves odiques; 2. l'atmosphère humaine et l'aura; 3. la lumière vivante; 4. du fluide ou agent magnétique; 5. radiations; diverses, phénomènes électriques et autres; 6. mouvements sans contact : expériences faites avec le pendule et divers autres appareils, télékinésies), un grand nombre d'expériences qui lui semblent témoigner en faveur de la réalité de ces radiations, de la présence dans l'homme de forces et d'énergies que seuls admettent les occultistes, les spirites, les théosophes, les métapsychistes. Il décrit les appareils de mesure, qui dérivent de la balance de torsion, ou de l'électromètre; il expose souvent avec beaucoup de bonne foi les objections faites à tel ou tel expérimentateur, et donne les réfutations apportées à ces objections. J'ai, non pas parcouru, mais lu son livre entièrement, il ne m'a point convaincu de la réalité de toutes ces radiations, ectoplasmiques ou autres. L. G.

Oesterreich, Traugott Konstantin. Les possédés. La possession démoniaque chez les primitifs, dans l'antiquité, au moyen âge et dans la civilisation moderne. Traduit de l'allemand avec l'autorisation de l'auteur par RENÉ SUDRE. 480 p., PAYOT, Paris, 1927. ISIS

L'auteur a écrit dans ce livre sur les possédés (pour l'édition allemande, voir *Isis*, 8, 811), un chapitre de l'histoire — en ordre dispersé — de la pathologie psychique. Après avoir examiné les signes extérieurs de la possession, l'état subjectif des possédés, la nature et l'extinction de la possession, et l'exorcisme (137 pp.), il étudie l'extension des états de possession et leur importance au point de vue de la psychologie des religions (294 pp.) : possession spontanée chez les primitifs; possession spontanée dans les civilisations supérieures (dans le passé et dans le présent); possession artificielle et volontaire chez les primitifs, shamanisme; possession artificielle et volontaire dans le monde gréco-romain (la Pythie de Delphes, les Sibylles, le culte de Dionysos, les cultes phrygiens, la doctrine de la possession de PLATON, etc.), et dans le présent (Inde, Birmanie, Siam, Chine, le mouvement spirite, les prétendus phénomènes d'incarnation, etc.) Tout cela appuyé sur les textes d'auteurs anciens, de voyageurs, d'ethnologues à qui l'auteur reproche d'ailleurs leur manque de psychologie, de psychiatres. — Appendice de quelques pages sur les relations entre la possession et les phénomènes métapsychiques. L. G.

Seligmann, S. Die magischen Heil- und Schutzmittel aus der un-

belebten Natur. Mit besonderer Berücksichtigung der Mittel gegen den bösen Blick. Eine Geschichte des Amulettwesens. Mit zahlreichen Abbildungen. XI + 310 S. Stuttgart, STRECKER und SCHRÖDER, 1927. ISIS

Reviewed by ERNST DARMSTAEDTER, *Mitt. zur Geschichte der Medizin*, 27, 125, 1928.

Villiers, Elizabeth. Amulette und Talismane und andere geheime Dinge : eine volkstümliche Zusammenstellung von Glücksbringern, Sagen, Legenden und Aberglauben aus alter und neuer Zeit. Bearbeitet und erweitert von ANTON MAX PACHINGER. 314 p., 26 pl. München, Drei Masken Verlag, 1927. ISIS

42. — ECONOMICS.

(*Economic doctrines and history, Commerce. Transportation and communications.*)

Ashley, Sir William. The bread of our forefathers. An enquiry in economic history. XII + 206 p., 4 pl. Oxford, Clarendon Press, 1928. ISIS

Hafen, Le Roy R. The overland mail 1849-1869; promoter of settlement, precursor of railroads. 361 p. map, illus., bibliog., index. Cleveland, Ohio, ARTHUR H. CLARK, 1926. ISIS

Reviewed by ERIC P. JACKSON, *The Geographical Review*, 165-6, January 1928.

Partsch, Josef. Geographie des Welthandels. 358 p. index. Breslau, FERDINAND HIRT, 1927. ISIS

Reviewed by EUGENE VAN CLEEF, *The Geographical Review*, 171, January 1928.

Renard, Georges. Les travailleurs du livre et du journal. 3 vols. de la Bibliothèque sociale des métiers. 278 + 352 + 304 p. Paris, G. DOIN, 1925-6. ISIS

Reviewed by L. GUINET, *Isis*, 9, 143-144, 1927.

43. — SOCIOLOGY, JURISPRUDENCE AND POSITIVE POLITY.

Brunner, Heinrich. Deutsche Rechtsgeschichte. Zweiter Band. Zweite Auflage neu bearbeitet von CLAUDIUS FREIHERRN VON SCHWERIN. XVI + 934 p. München, DUNCKER und HUMBLOT, 1927. ISIS

This second volume, the first edition of which appeared 36 years earlier, deals with the Frankish period. The second edition of the first volume appeared in 1906. G. S.

De Man, Henri. Au delà du marxisme. Bruxelles, L'Églantine, 1927. ISIS

Reviewed by HENRI SÉE, *Revue de Synthèse historique*, t. 44, 95-101, 1927. Translation of *Zur Psychologie des Socialismus*, published in Jena, 1926, reviewed in *Isis*, 9, 206. G. S.

De Man, Henry. The psychology of socialism. Translated from the second German edition by EDEN and CEDAR PAUL. 509 p. London, ALLEN and UNWIN, 1928. ISIS

See *Isis*, 9, 206.

Krische, Paul. Das Rätsel der Mutterrechtsgesellschaft. Eine Studie über die Frühepoche der Leistung und Geltung des Weibes. Unter Mitarbeit von MARIA KRISCHE. X + 256 p. München, GEORG MÜLLER, 1927. ISIS

Reviewed by ALEXANDER BECK, *Deutsche Literaturzeitung*, 1916-18, 1927.

Ogburn, William Fielding, and **Goldenweiser, Alexander** (*editors*). The social sciences and their interrelations. VIII + 506 p. Boston, HOUGHTON and MIFFLIN, 1927. ISIS

Reviewed by EDWIN E. AUBREY, *American Historical Review*, 33, 619-21, 1928.

Ruggiero, Guido de. The history of European liberalism. Translated by R. G. COLLINGWOOD. XI + 476 p. Oxford, University Press, 1927. ISIS

Thomas, Franklin. The environmental basis of society. A study in the history of sociological theory. (*The Century social science series*). VII + 336 p. front. New York, The Century Co., 1925. ISIS

Webb, Sidney and **Beatrice.** English local government : English poor law history. Part I : The old poor law. X + 447 p. London, LONGMANS, 1927. ISIS

Reviewed by C. E. FRYER, *American Historical Review*, 33, 389-390, 1928.

44. — HISTORY OF CIVILIZATION.

(*General history, historical methods, biography and chronology.*)

Anselmo, Antonio. Bibliografia das bibliografias Portuguesas. (*Publicações da Biblioteca Nacional. Biblioteca do bibliotecario e do arquivista*, III.) 158 p., index. Oficinas Graficas da Biblioteca Nacional, Lisboa, 1923. ISIS

An invaluable introductory aid to those who would study the history of science and civilization in Portugal and Brazil. Divided into three main parts :

1) general bibiliographies (200 titles); 2) special bibliographies and bibliographical monographs on particular topics (738 titles); and 3) periodical publications relating to bibliography (90 titles). The second part contains sections on the various arts and sciences. Author index. J. K. W.

Burckhardt, Jacob. (1818-97) Die Kultur der Renaissance in Italien. Ein Versuch. Vierzehnte Auflage. Durchgesehen von WALTER GOETZ. VIII + 538 p. (portrait) Leipzig, ALFRED KRÖNER, 1925. ISIS

Vorwort : « Die 13. Auflage dieses Werkes erschien als eine Wiederherstellung der Urausgabe JACOB BURCKHARDTS (1860), befreit von allen Erweiterungen und Veränderungen, die LUDWIG GEIGER von der 3. bis zur 12. Auflage in steigendem Masse vorgenommen hatte. Nach knapp drei Jahren ist diese Urausgabe vergriffen — ein Beweis, wie gross das Bedürfnis nach dem ursprünglichen Texte JACOB BURCKHARDTS gewesen ist. Die neue Auflage erscheint nun auf Wunsch des Verlags in einer andern handlicheren Form : sie ist für den Reisenden gedacht, der das Buch mit sich nach Italien nehmen will. Im übrigen ist gegenüber der 13. Auflage nur ganz wenig verändert worden : kleine Mängel wurden verbessert und einzelne Hinweise in den Anmerkungen neu hinzugefügt. Alle diese Hinweise sind in eckigen Klammern gegeben; wurden sie aus den früheren Auflagen GEIGERS übernommen, so sind sie als « Zusatz GEIGERS » kenntlich gemacht. WALTER GOETZ. »

Davis, H. W. C. and **Weaver, J. R. H.** (*editors*). The dictionary of national biography. Founded in 1882 by GEORGE SMITH. Years 1912-21. With an index covering the years 1901-1921 in one alphabetical index. XXVI + 623 p. Oxford, University Press, 1927. ISIS

Gamble, William Thomas Miller. The Monumenta Germaniae historica : its inheritance in source-valuation and criticism. VI + 202 p. Washington, D. C., Catholic University of America, 1927. ISIS

Reviewed by JAMES WESTFALL THOMPSON, *American Historical Review*, 33, 636-8, 1928.

Gilson, Étienne. Le rôle de la philosophie dans l'histoire de la civilisation. *Revue de métaphysique et de morale*, 34, 169-176, 1927. ISIS

Masson-Oursel, Paul. Les objections des Orientaux contre notre critique historique. *Revue d'histoire de la philosophie*, 1, 261-8, 1927. ISIS

Munro, Dana C. The Crusades and other historical essays presented to DANA C. MUNRO by his former students. Edited by LOUIS J. PAETOW. X + 419 p. New York, F. S. CROFTS, 1928. ISIS

Contains twelve essays by American scholars — eight on the Crusades and four others, a list of MUNRO's writings, 1894-1926, and a portrait. G. S.

Ogg, Frederic Austin. Research in the humanistic and social sciences.

Report of a survey conducted for the American Council of Learned Societies. (*American Council of Learned Societies*, 218). VIII + 454 p. New York, Century, 1928. ISIS

Elaborate study of present conditions of research in America and of various means of improving them. It will be of great value to administrators, and will help them better to realize the necessity of original and creative scholarship. It was undertaken at the expense of the Carnegie Corporation of New York. G. S.

Pierce, Bessie Louise. Public opinion and the teaching of history in the United States. XI + 380 p. New York, KNOPF, 1926. ISIS

Review by CARLTON J. H. HAYES, *American Historical Review*, 33, 360-361, 1928.

45. — HISTORY OF ART.

(*Art and science, Iconography. Arts and crafts.*)

(Iconography, national). Enquête sur l'organisation de la documentation iconographique. *Bulletin of the International Committee of Historical Sciences*, 1, 525-531, 1928. ISIS

Valuable information on iconographical materials relative to Denmark by OTTO ANDRUP, and to France, by ANDRÉ BLUM and ALBERT DEPRÉAUX.

Sarton, George. Medallic illustrations of the history of science. First series : XIXth and XXth centuries. Second article. *Isis*, 9, 359-362, 8 ill. on 4 pl , 1927. ISIS

Medals dedicated to the following scientists are considered : 6. VAN DER WAALS, 7. QUETELET, 8. LOBACHEVSKII, 9. CAUCHY, 10. GAY-LUSSAC, 11. GAUSS, 12. CUVIER.

Sarton, George. Medallic illustrations of the history of science. First series : XIXth and XXth centuries. Third article. *Isis*, 9, 420-423, 4 plates, 1927. ISIS

Medals no. 13 to 18 : HENRI POINCARÉ; JEAN BAPTISTE DUMAS; CHRISTOPHER HANSTEEN; LOUIS AGASSIZ; KELVIN; RUDOLF VIRCHOW.

46. — HISTORY OF LANGUAGE, WRITING AND LITERATURE.

Hankamer, Paul. Die Sprache, ihr Begriff und ihre Deutung im sechzehnten und siebzehnten Jahrhundert; ein Beitrag zur Frage der literarhistorischen Gliederung des Zeitraums. XV + 207 p. Bonn, FRIEDR. COHEN, 1927. ISIS

Reviewed by RICHARD ALEWYN, *Deutsche Literaturzeitung*, 269-274, 1928.

Laguna, (Mrs.) Grace (Mead) Andrus de. Speech; its function and

development XII + 363 p. New Haven, Yale University Press, 1927. ISIS

47. — HISTORY OF MORALS.

(*Moral organization of society*).

Dittrich, Ottmar. Geschichte der Ethik. Die Systeme der Moral vom Altertum bis zum Gegenwart. 1r Bd : Altertum bis Ausgang des Altertums. 2r Bd : Von Hellenismus bis zum Ausgang des Altertums. 3r Bd : Mittelalter bis zum Kirchenreformation. 374 + 311 + 510 p. Leipzig, F. MEINER, 1926. ISIS

Reviewed by E. BRÉHIER in *Revue d'histoire de la philosophie*, 1, 344-8, 1927.

Rignano, Eugenio. Science et morale. *Revue de métaphysique et de morale*, 34, 325-35, 1927. ISIS

Roth, Léon. The science of morals. An essay in method. 141 p. London, BENN, 1928. (5s 6d) ISIS

« What experimental physics has done for our knowledge of external nature, may we not hope that experimental ethics will do for our knowledge of man ? » This excellent little book gives the answer to this question, an emphatic yes, which the author carefully justifies. One has but too often repeated after HENRI POINCARÉ that there can be nothing in common between science and morals, because science speaks in the indicative, and morals in the imperative. For once, POINCARÉ was wrong, for scientists and moralists alike use occasionally either mood. LEON ROTH is well known to our readers because of his activity in behalf of the Spinoza Society (*Isis*, 5, 143), of his book on SPINOZA, DESCARTES and MAIMONIDES (1924; *Isis* 7, 324) and his edition of the Correspondence of DESCARTES and CONSTANTIJN HUYGENS (1926; *Isis*, 9, 434-37). G. S.

48. — HISTORY OF PHILOSOPHY.

(*See also above* 18. *Philosophy of science*).

Bréhier, Émile. Histoire de la philosophie. T. 1. L'antiquité et le moyen âge; fasc. 2, période hellénistique et romaine. 264 p. Paris, ALCAN, 1927. ISIS

Ce second fasc. de l'histoire de la philosophie d'ÉMILE BRÉHIER (l'œuvre sera complète en 6 fasc.; pour le premier, voir *Isis*, 9, 593) passe en revue les écoles et les courants d'idées qui couvrent les quatre siècles qui précédent notre ère, et les cinq premiers siècles de celui-ci; les doctrines de PLATON, d'ARISTOTE, examinées dans le premier fascicule, en sont naturellement exclues. Je reviendrai sur cet ouvrage lorsque tout le T. I. sera publié. L. G.

Carus, Paul (1852-1919). The point of view. An anthology of religion and philosophy selected from the works of PAUL CARUS Edited by CATHERINE COOK. Chicago, Open Court, 1927. ISIS

« PAUL CARUS was born in July, 1852, at Ilsenburg am Harz, where his father was then pastor. He received his early and thorough training in the Gymnasia of Posen and Stettin and afterward studied philosophy, classical philology, and the natural sciences at the universities of Greifswald, Strassburg, and Tübingen, where in 1876 he received the degree of Ph. D. Having successfully passed the examination for state service, he was appointed teacher in the military academy of Dresden, but his liberal views soon brought him into conflict with the autocratic authorities. He tendered his resignation and turned to America where in the atmosphere of freedom he hoped to find the opportunity for the development and realization of the ideals which filled his mind and heart. His expectations were more than fulfilled when in 1887 he was called to the editorship of The *Open Court* and afterward to that of *The Monist*, the two periodicals which owe their existence to the profound scientific and religious interests and to the generosity of EDWARD C. HEGELER. » To these words extracted from the preface, I wish to add my own testimony. PAUL CARUS was a noble man whose influence upon American thought was extremely beneficial. Our country owes him a deep debt of gratitude. G. S.

Cresson, André. Les courants de la pensée philosophique française. 2 vol. 208, 212 p. Paris, ARMAND COLIN, 1927. ISIS

Reviewed by HÉLÈNE METZGER, *Isis*, 9, 489-490, 1927.

Hook, Sidney. The metaphysics of pragmatism. With an introductory word by JOHN DEWEY. 144 p., 1 pl. Chicago, Open Court, 1927. (Cloth $ 2.00; paper $ 1.00) ISIS

Contents : 1. The metaphysics of the instrument; 2. Thinking as instrumental; 3. The metaphysics of leading principles; 4. Categorical analysis; 5. On human freedom. « The volume is noteworthy because... it expresses an equilibrium which is consciously and deliberately sustained between that newer movement which goes by the name of pragmatism and instrumentalism and essential portions of classic thought. » JOHN DEWEY.

Lenoir, Raymond. La philosophie devant la vie. *Revue de métaphysique et de morale*, 34, 177-237, 1927. ISIS

Meyerson, Émile. Identité et réalité. XIX + 571 p. Troisième édition. (*Bibliothèque de philosophie contemporaine*) Paris, ALCAN, 1926. ISIS

Reviewed by HÉLÈNE METZGER, *Isis*, 9, 470-2, 1927.

Piccoli, Valentino. Storia della filosofia italiana, VIII + 340 p., G. B. PARAVIA, Torino, 1927. (19 l.). ISIS

Cette histoire de la philosophie italienne, qui n'est pas un ouvrage d'érudition, malgré ses 22 pages de bibliographie, a son origine dans deux cours professés en 1923 et 1924 par l'auteur au Circolo filologico milanese. Le plan en est conçu largement, et PICCOLI consacre des chapitres entiers à DANTE, à PETRARCA, à LEONARDO DA VINCI, à TORQUATO TASSO, à GIACOMO LEOPARDI, à MACHIAVELLI et MICHELANGELO, qui, situés dans le courant philosophique de leur temps, contribuent à l'éclairer. L'inspiration de l'ouvrage est nette-

ment catholique et nationale. Contrairement à BERTRANDO SPAVENTA (1908), l'auteur estime que la philosophie italienne du Moyen-âge est, non pas européenne, mais nettement italienne. Il donne d'ailleurs beaucoup plus d'étendue aux chapitres consacrés au moyen-âge et à la Renaissance (près de 200 p.) qu'à la philosophie moderne et contemporaine. Les noms mis en saillie sont naturellement G. BRUNO, T. CAMPANELLA, G. VICO, et V. GIOBERTI, à qui PICCOLI a consacré de nombreuses études, et tout récemment un *Avviamento alla filosofia di Vincenzo Gioberti* (PARAVIA, Torino, 1925).

L. G.

Russell, Bertrand. Die Probleme der Philosophie. Autoris. Uebersetzung aus dem Englischen von PAUL HERTZ. VII + 143 p. Erlangen, Weltkreis-Verlag, 1926. ISIS

Reviewed by HEINRICH SCHOLZ, *Deutsche Literaturzeitung*, 316-319, 1928.

Schaub, Edward Leroy. Philosophy today. Essays on recent developments in the field of philosophy. X + 609 p. Chicago, Open Court, 1928. ($ 3.75) ISIS

A collection of essays reprinted from *The Monist* (April 1926 etc.) by its editor, purposing to give a general view of present philosophical tendencies. The main subdivision is national, which is justifiable to some extent, but not entirely. I should prefer an other subdivision, and I truly believe that the national one does not hold for the greatest works. This survey is nevertheless very useful. It is especially elaborate with regard to the English speaking, French speaking and German speaking countries. The Anglo-Saxon views are explained by R. F. A. HOERNLÉ, R. W. SELLARS, M. C. OTTO, WILBUR M. URBAN, HAROLD R. SMART, HENRY W. WRIGHT, EDWARD L. SCHAUB, and SEYMOUR GUY MARTIN; the French views, by D. PARODI, ANDRÉ LALANDE, GEORGE GUY-GRAND, MARYSE CHOISY, EMMANUEL LEROUX, PAUL MASSON-OURSEL, JEAN PIAGET, GEORGE DAVY, ED. CLAPARÈDE, and EUGENE OSTY; the German views, by ARTHUR LIEBERT, PAUL F. LINKE, KURT GRELLING, HANS DRIESCH, BRUNO BAUCH, MAX DESSOIR, S. BOVENSIEPEN, A. WENZL, and ALBERT GÖRLAND. Three smaller sections are devoted respectively to Russia, Scandinavia and South America (especially Argentina); they are contributed by S. FRANK, HARALD HÖFFDING and CORIOLANO ALBERINI.

G. S.

49. — HISTORY OF RELIGION.

(Science and religion).

Bate, Herbert Newell (*editor*). Faith and order. Proceedings of the World Conference, Lausanne, August 3-21, 1927. XV + 534 p. New York, DORAN, 1927. ISIS

Reviewed by E. HIRSCH, *Deutsche Literaturzeitung*, 10-19, 1928.

Coulton, George Gordon. Five centuries of religion. (in four volumes). Volume II : The friars and the dead weight of tradition, 1200-1400 A. D. XXX + 703 p. Cambridge, University Press, 1927. ISIS

Reviewed by SYDNEY M. BROWN, *American Historical Review*, 33, 633-5, 1928.

Frazer, Sir James George. Man, God and immortality. Thoughts on human progress. Passages chosen from the writings of Sir JAMES GEORGE FRAZER, revised and edited by the author. XVI + 437 p. London, MACMILLAN, 1928. ISIS

Freud, Sigmund. Die Zukunft einer Illusion. 91 p. Leipzig, Internat. Psychoanalyt. Verlag, 1927. ISIS

Reviewed by E. KRETSCHMER, *Deutsche Literaturzeitung*, 200, 1928.

Gauthiot, Robert; Pelliot, Paul; Benveniste, Emile. Le sûtra des causes et des effets du bien et du mal. Édité et traduit d'après les textes sogdien, chinois et tibétains. T. 1 : Textes sogdiens et chinois. T. 2 : Transcription, traduction, commentaire et index, fasc 1 (Mission Pelliot, Série 4°, 2). XI + 66 p., 52 pl. Paris, GEUTHNER, 1920; 1926. ISIS

Reviewed by WOLFGANG LENTZ, *Deutsche Literaturzeitung*, 2445-2449, 1927.

Huxley, Julian S. Religion without revelation. (What I believe series). 392 p. London, BENN, 1927. ISIS

Oltramare, Paul. La religion et la vie de l'esprit. 229 p. (*Bibliothèque de philosophie contemporaine*). Paris, F. ALCAN, 1925. ISIS

Reviewed by FRIEDRICH KARL SCHUMANN, *Deutsche Literaturzeitung*, 2046-48, 1927.

Stone, (Rev.) James S. The cult of Santiago. Traditions, myths, and pilgrimages. A sympathetic study. XII + 380 p. New York. LONGMANS, GREEN, 1927. ISIS

« The book has for its purpose the encouragement of a still more lively interest in St. JAMES and the things which have been associated with him in history and tradition. The subject is capable of wide expansion. It was not found possible to gather and present in so limited a space all that is known or told of the distinguished Apostle; but enough is given to illustrate the part he played, or the part that has been assigned to him, in history or in folklore, and to clear and freshen an atmosphere beclouded and darkened by time and change, so that the man himself may be better seen, the virtues which were attributed to him, and the wonders he is said to have wrought. »

Streeter, Burnett Hillman; Chilcott, Catherine M.; MacMurray, John; and Russell, Alexander S. Adventure : the faith of science and the science of faith. IX + 247 p. London, MACMILLAN, 1927. ISIS

Reviewed in *Nature*, 121, 448, 1928, by E. S. R.

VII. MEDICINE.

50. — HISTORY, ORGANIZATION, AND PHILOSOPHY OF MEDICINE.

Barduzzi, Domenico. Manuale di storia della medicina. 2 vol. 286 + 302 p., Sten. editrice, Torino, 1923-7. ISIS

Manuel simple, clair, bien adapté au but que s'est proposé son auteur : rendre agréable et facile aux étudiants la connaissance des grandes lignes de l'histoire de la médecine. Peut-être certains détails peuvent-ils être contestés : est-il juste de dire (1, p. 190), que PECQUET a plagié EUSTACHI ? Celui-ci avait bien vu, sur le cheval, le canal thoracique, mais sans en connaître l'origine ni la fonction; au reste la découverte des « veines lactées » par G. ASELLI, n'est que de 1622; et PECQUET est bien le premier à avoir vu le «receptaculum chyli », et à avoir établi la circulation du chyle et de la lymphe. — L'ouvrage manque d'un index; mais il possède un très heureux tableau chronologique de 37 pp. (arrêté à 1920) des principaux événements de l'histoire de la médecine. L. G.

Baude, E. L. A. Prophylaxie antivénérienne individuelle à travers les âges. Essai historique (*Thèse*). 48 p. Paris, LE FRANCOIS, 1927. ISIS

Le préservatif mécanique, sur la valeur duquel on n'a pas toujours été d'accord, est employé depuis le milieu du XVI[e] siècle; tous les préservatifs chimiques, avec ou sans Hg, presque tous d'ailleurs remèdes secrets, sont inefficaces, sauf la pommade au calomel préconisée par METCHNIKOFF (1906) ou celles qui en dérivent. Bonne bibliographie. L. G.

Baur, Marguerite Louise. Recherches sur l'histoire de l'anesthésie avant 1846. *Janus*, 31, 24-39, 63-90, 124-37, 170-182, 213-25, 264-70, 1927. ISIS

Exposé des moyens employés depuis l'antiquité pour provoquer l'anesthésie, et des expériences par lesquelles l'auteur a contrôlé quelques uns de ces procédés (à suivre).

Brunn, W. von. Kurze Geschichte der Chirurgie. V + 339 S., 317 Abb. Berlin, SPRINGER, 1927. ISIS

Carvalho, Silva. Historia da urologia em Portugal até ao meiado do seculo XIX. 84 p. Soc. nacional de tipografia, Lisboa, 1925. ISIS

Cau, Giovanni. Urologhi, uromanti, uroscopi e la matula. *Riv. di storia d. sc. med. e natur.*, 18, 244-59, 1927. ISIS

Dubreuil-Chambardel, Louis (1879-1927). Obituary by P. DELAUNAY.

Bulletin de la société française d'histoire de la médicine, 21, 331-334, portrait, 1927. ISIS

Grote, L. R. (*editor*). Die Medizin in Selbstdarstellungen Vols. 1. to 7, Leipzig, FELIX MEINER, 1923-28. ISIS

Collection of medical autobiographies. The following have appeared. Vol. 1 (1923) : HOCHE (Freiburg), KÜMMELL (Hamburg), MARCHAND (Leipzig), MARTIUS (Rostock), ROUX (Halle), WIEDERSHEIM (Freiburg). Vol. 2 (1923) : BARFURTH (Rostock), GRAWITZ (Greifswald), HUEPPE (Prag), H. H. MEYER (Wien), PENZOLDT (Erlangen), ROSENBACH (Göttingen), FRIEDR. SCHULTZE (Bonn), HUGO SCHULZ (Greifswald). Vol. 3 (1924) : HEMMETER (Baltimore), v. KORÁNYI (Budapest), AD. LORENZ (Wien), PAYR (Leipzig), PETRÉN (Lund), REHN (Frankfort), TENDELOO (Leiden). Vol. 4 (1925) : FREUD (Wien), GOTTSTEIN (Berlin), HEUBNER (Dresden), v. KRIES (Freiburg), MUCH (Hamburg), ORTNER (Wien). Vol. 5 (1925) : BRAUN (Zwickau), HENSCHEN (Stockholm), PETERS (Rostock), RAMÓN Y CAJAL (Madrid), SAHLI (Bern). Vol. 6 (1926) : BECHTEREW (Leningrad), FOREL (Yvorne), GLUCK (Berlin), HAUSER (Erlangen), v. LIEBERMANN (Budapest). Vol. 7 (1928) : BÄUMLER (Freiburg), BOAS (Berlin), v. LENHOSSÉK (Budapest), POSNER (Berlin), RICHET (Paris).

Hemmeter, John C. Master minds in medicine, an analysis of human genius as the instrument in the evolution of great constructive ideas in the history of medicine, together with a system of historic methodology. Introduction by KARL SUDHOFF. New York, Medical Life Press, 1927. ISIS

Reviewed by FRANCIS R. PACKARD, *Annals of Medical History*, 9, 419-421, 1927.

Holländer, Eugen. Äskulap und Venus. Eine Kultur- und Sittengeschichte im Spiegel des Arztes VII + 488 p , 330 ill. Berlin, Propylaen-Verlag, 1928. ISIS

Reviewed by KARL BIRNBAUM, *Deutsche Literaturzeitung*, 2622-2624, 1927; and by K. SUDHOFF, *Mitt. zur Geschichte der Medizin*, 27, 56-58, 1928.

Isray, Stephen d'. Patristic medicine. *Annals of Medical History*, 9, 364-378, 1927. ISIS

Jorga, N. Medici si medicina in trecutul românese. (Physicians and medicine in old Rumania; in Rumanian). 44 p. Bucarest, 1919. ISIS

Reviewed by V. BOLOGA, *Mitt. zur Geschichte der Medizin*, 27, 131, 1928. This is followed by reviews of many other Rumanian medico-historical publications (p. 132-138, 219-22)

Koch, Richard. Die Geschichte der Medizin im Universitätsunterricht. *Archiv für Geschichte der Medizin*, 20, 1-16, 1928. ISIS

Kruif, Paul de. « Mikrobenjäger ». Uebersetzt von SIEGMUND FEILBOGEN. 346 p. Zürich, ORELL FÜSSLI, 1927. ISIS

Lönnquist, Bernt. Einige bemerkenswerte Aerzte an der Akademie zu Åbo (Finland) 1640-1837. *Janus*, 31, 368-74, 1927. ISIS

(Medicine, history. VIth international congress). Reports by LAIGNEL-LAVASTINE and PAUL DELAUNAY. *Bull. Soc. fr. d'Hist. Méd.*, 21, 335-376, 1927; and by TRICOT-ROYER, *Janus*, 31, 423-43, 1927. ISIS

Meyer-Steineg, Th. und **Sudhoff, Karl.** Geschichte der Medizin im Überblick mit Abbildungen. Dritte, durchgesehene Auflage; mit 217 Abbildungen im Text. X + 446 p. Jena, GUSTAV FISCHER, 1928. ISIS

The first edition of this very remarkable and richly illustrated treatise, published in 1921, was reviewed in *Isis*, 4, 368-69; the second, 1922, was reviewed in *Isis*, 5, 188. We shall let this new, third, edition, speak for itself, by reproducing its preface in extenso : « Trotz Ungunst der Zeiten muss das 4. und 5. Tausend dieses illustrierten Ueberblicks über die Geschichte der Heilkunde jetzt gedruckt werden. Die neue Auflage war uns Veranlassung, den Text sorgfältig nochmals durchzusehen und, namentlich in der mittleren Zeit, kleine Aenderungen und kurze Zusätze an zahlreichen Stellen vorzunehmen und einzufügen. Auch das Bildmaterial wurde einer genauen Nachprüfung unterzogen. Abgenutzte Druckstöcke wurden nach den Originalvorlagen neu hergestellt oder durch Geeigneteres ersetzt, einiges Entbehrliche ausgeschieden und sechs neue Bilder eingefügt. So ist das Buch wieder vollauf der Höhe und für den starken Bedarf unserer Aerzte nach historischer Aufklärung bereit. Möge es auch weiterhin fleissige Leser finden. » G. S.

Neuburger, Max. History of medicine. Translated by ERNEST PLAYFAIR. 2 vols. Vol. 1, 1910, vol. 2, Part I, 1925, p. 1-135. Oxford University Press. ISIS

Reviewed by STEPHEN D'IRSAY, *Isis*, 9, 486-9, 1927.

Sérieux, Paul, et **Goulard, Roger.** Le service médical au donjon de Vincennes (Prison d'État). *Bul. Soc. fr. d'Hist. Méd.*, 21, 419-435, 1927. ISIS

Sigerist, Henry E. Deutsche medizinische Handschriften aus Schweizer Bibliotheken. *Archiv für Geschichte der Medizin*, 17, 205-240, 1925. ISIS

Spencer, Herbert R. The history of British midwifery from 1650 to 1800. The Fitzpatrick Lectures for 1927, delivered before the Royal College of Physicians of London. XXIV + 185 p., 9 pl. London, BALE, Sons and DANIELSSON, 1927. ISIS

Stern, Bernard Joseph. Social factors in medical progress. 5 + 137 p. New York, Columbia University Press, 1927. ISIS

Reviewed by FRANCIS R. PACKARD, *Annals of Medical History*, 10, 105-06, 1928.

Sticker, Georg. Die Entwicklung der ärztlichen Kunst in Deutschland. 52 S. Mit 19 Tafeln. (*Münchener Beiträge zur Geschichte und Literatur der Naturwissenschaft und Medizin*, Heft 6). München, Münchner Drucke, 1927. ISIS

Strömgren, Hedwig. Einige antike und mittelalterliche Kuren gegen Zahnschmerzen. *Janus*, 31, 359-67, 1927. ISIS

Ten Doesschate, A. Overzicht van de geschiedenis der geneeskunde te Zwolle. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 81-96, 1928. ISIS

Thompson, C. J. S. The clinical thermometer. Its history and development. *Medical Life*, 34, 510-513, 1927. ISIS

51. — EPIDEMIOLOGY, HISTORY OF SPECIAL DISEASES, PUBLIC HEALTH AND SOCIAL MEDICINE.

Ebstein, Erich. A contribution to the history of hemorrhoids and their treatment from the time of HIPPOCRATES to the modern bacteriological era. *Medical Life*, 35, 5-18, 2 portraits, 1928 (with long bibliography.) ISIS

Ebstein, Erich. Ueber die chirurgische Behandlung der Lungenkavernen. *Archiv für Geschichte der Medizin*, 20, 180, 1928. ISIS

Héricourt, J. Le terrain dans les maladies. Préface de CH. RICHET. 250 p. *Biblioth. de philosophie scientif.*, FLAMMARION, Paris, 1927. ISIS

L'auteur, qui a pris, avec CHARLES RICHET, une large part à l'introduction de la sérothérapie dans la thérapeutique, fait en somme ici l'historique — en ordre dispersé — des conceptions que se font actuellement les médecins, de la variabilité des terrains vis à vis des germes microbiens, et aussi celui, quoique dans une plus étroite mesure, de la variabilité des germes eux-mêmes, avec application des moyens nouveaux de protection contre les germes, moyens de protection trouvés dans la voie ouverte par les recherches de PASTEUR sur les virus atténués et les vaccinations. L.G.

Honig, P. J. J.; Swellengrebel, N. H. Bijdrage tot de geschiedenis der malaria in Nederland. Vierde mededeeling. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 1-10, 1928. ISIS

Kahn, Morris H. Historical survey of our knowledge of bronchial asthma. *Medical Life*, 35, 109-162, 6 pl., 1928. ISIS

Including a photostatic reproduction of the section on asthma in JACOBUS SYLVIUS's *Morborum internorum*, Paris, 1545, and a bibliography. G. S.

Kappers, C. U. Ariëns. Overzicht van de geschiedenis der therapie van geestes- en zenuwziekten en haar tegenwoordigen stand. *Bijdragen tot de geschiedenis der geneeskunde*, 7, 649-664, 1927. ISIS

Kortenhaus, Friedrich. Das Wechselfieber in der Rheinprovinz und sein Verschwinden. *Archiv für Geschichte der Medizin*, 20, 120-136, 2 pl., 1928. ISIS

Lint, J. G. de. The treatment of the wounds of the abdomen in ancient times. *Annals of Medical History*, 9, 403-407, 4 fig., 1927. ISIS

Neuburger, Max. Die Entwicklung der Lehre von den Herzkrankheiten. Separatabdruck aus der *Wiener Medizinischen Wochenschrift*, Nr. 3 und 4, 16 S., 1928. ISIS

Neuburger, Max. Die Lehre von den Hautkrankheiten vor HEBRA. *Wiener Medizinische Wochenschrift*, 19 p., 1928. ISIS

Neuburger, Max. Die historische Grundlage der Lehre von den Berufskrankheiten. Sonderdruck aus der *Zeitschrift für soziale Hygiene « Volksgesundheit »*, Organ der Oesterreichischen Gesellschaft für Volksgesundheit, I. Jahrgang, Heft 12, 10 p., 1927. ISIS

The first treatise on professional diseases is undoubtedly the *De morbis artificum diatriba* published by BERNARDO RAMAZZINI at Modena in 1700. It does not follow that the subject had never been touched incidentally before 1700. Indications relative to it may be found throughout medical literature, beginning with HIPPOCRATES. NEUBURGER's paper is a review of these indications. G. S.

Nohl, Johannes. Der Schwarze Tod, eine Chronik der Pest. 373 p. Potsdam, GUSTAV KIEPENHEUER, 1924. ISIS

Reviewed by STEPHEN D'IRSAY, *Isis*, 9, 380-382, 1927.

Weiss, Samuel. History of gall-tract and biliary disease. *Medical Life*, 34, 663-676, 1927. ISIS

52. — HISTORY OF HOSPITALS AND MEDICAL TEACHING.

Bouricius, L. G. N. Eenige grepen uit de geschiedenis van het St. Joris gasthuis te Delft. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 29-37, 2 fig., 1928. ISIS

Bouricius, L. G. N. Geschiedenis van het geneeskundig gesticht voor krankzinnigen. Het St. Joris Gasthuis en het daarmede verbonden geweest zijnde « Tuchthuis binnen Delft ». Uitgegeven ter gelegenheid van het 250-jarig zelfstandig bestaan 1677-1927. Delft, 1927. ISIS

Reviewed in *Bijdragen tot de geschiedenis der geneeskunde*, 7, 670.

Brugsch, Theodor. Die Klinik in Halle (historisch). *Archiv für Geschichte der Medizin*, 20, 17-32, 1928. ISIS

Carvalho, Augusto da Silva. A régia escola de cirurgia de Lisboa. 288 p., portr. Lisboa, Tip. do anuario comercial, 1926. ISIS

L'auteur prend en réalité prétexte de l'histoire de l'école de chirurgie de Lisbonne, fondée le 25 juin 1825, pour passer en revue l'histoire de l'enseignement de la médecine en Portugal depuis le XVI^e^ siècle (Coimbre, Porto, Lisbonne ; hopitaux, écoles spéciales ; méthodes ; interventions gouvernementales). Les pp. 159-254 sont occupées par des notices bio-bibliographiques avec portraits, sur les professeurs de l'école de Lisbonne. L.G.

Dittrick, Howard. Fees in medical history. *Annals of Medical History*, 10, 90-101, 1928. ISIS

Doughty, Roger G. History of the medical department of the University of Georgia. A short story of its early struggles. *Annals of Medical History*, 10, 80-85, 1928. ISIS

Giedroyc, Franciszek. Stuzba zdrowia w dawnem Wojsku Polskiem. (Sanitation in the old Polish army). 550 p. Warsaw, 1927. ISIS

Reviewed by JOSEF FRITZ, *Mitt. zur Geschichte der Medizin*, 27, 110, 1928.

Hellinga, G. Een stukje gasthuisgeschiedenis uit het midden der negentiende eeuw. *Bijdragen tot de geschiedenis der geneeskunde*, 8, 38-42, 1928. ISIS

Hellinga, G. Eenige mededeelingen uit de geschiedenis der voormalige Amsterdamsche Kraamzaal. *Bijdragen tot de geschiedenis der geneeskunde*, 7, 665-670, 1927. ISIS

Meffert, Franz. Caritas und Volksepidemien. XVI + 267 p. Freiburg i. Br., Caritasverlag, 1925. ISIS

Meffert, Franz. Caritas und Krankenwesen bis zum Ausgang des Mittelalters. XVII + 444 p. Freiburg i. Br., Caritasverlag, 1927. ISIS

53. — PHARMACY, PHARMACOLOGY. TOXICOLOGY.

Ferchl, Fritz. Illustrierter Apotheker-Kalender 1928. Mittenwald. Verlag; Deutscher Apotheker-Verein, Berlin. ISIS

The object of this calendar is to cause the members constituting the pharmaceutical profession to stop a moment and to reflect in this mad rush of business and professional life. Not only this, but to instill into its younger members a love of their calling by studying its past. The fourth « Jahrgang » is as replete with interesting illustrations and valuable information as were its three precursors. To the teacher of the history of science it affords an opportunity to secure excellent illustrative material at a nominal price. E. K.

Ferchl, Fritz. Münchens älteste Apotheke. Geschichte der Schützenapotheke von den Anfängen bis zur Jetztzeit. 62 p., illus. Stuttgart, Wissensch. Verlagsgesellschaft, 1927. ISIS

Gesellschaft für Geschichte der Pharmazie, Veröffentlichungen der. ISIS

About a year ago (*Isis*, 10, 56) the organization of a new society for the history of pharmacy was announced. According to its « Mitteilungen » it has 424 members : Germany, 179; Czecoslovakia, 28; Austria, 26; Rumania, 18; Jugoslavia, 10; Switzerland, 4; Sweden, 3; Esthonia, 3; England, 1; France, 1; Holland, 1; Latvia, 1; Norway, 1; Russia, 1; Spain, 1; Hungary, 1; United States, 147. With the first number of the « *Mitteilungen* » there has been distributed to the members the first of the « *Veröffentlichungen* » viz. « Apotheker-Lehr- und Gehilfen Briefe aus drei Jahrhunderten » by FRITZ FERCHL, the compiler of the Apotheker-Kalender (see above). It is a brochure of 48 pages with 20 illustrations, one of which is colored. Another colored illustration is on the cover. Other numbers are announced. These may be had by non-members through the regular channels at two Marks each. The society expects to publish four each year. E. K.

Haberling, Wilhelm. Der Triumphwagen des Antimons. Der Kampf um die Einführung des Antimons in den Arzneischatz zu Beginn der Neuzeit. (*Therapeutische Berichte*, Nr. 11 und 12). 12 p., 8 ill., 1927. ISIS

VIII. EDUCATION.

(Methods of accumulating, imparting, and diffusing knowledge).

54. — EDUCATION (*Generalities, methods, colleges, universities*).

(Cambridge, Massachusetts). Harvard College records : corporation records, 1636-1750. Two volumes. (*Publications of the Colonial Society of Massachusetts*, vols. 15, 16 : collections printed in memory of FREDERICK LEWIS GAY.) CLXXX + X + 1003 p. Boston, The Society, 1925. ISIS

Reviewed by MARCUS W. JERNEGAN, *American Historical Review*, 33, 706, 1928.

Hatch, Louis C. The history of Bowdoin College. XII + 500 p. Portland, Me., LORING, SHORT and HARMON, 1927. ISIS

Reviewed by W. E. LUNT, *American Historical Review*, 33, 705, 1928.

Heer, Georg. Marburger Studentenleben, 1527-1927. 222 S. 25 Taf. Marburg, N. G. Elwertsche Verlagsbuchh., 1927. ISIS

Reviewed by ERNST HEYMANN, *Deutsche Literaturzeitung*, 449-452, 1927.

Ladeuze, P. L'université de Louvain, 1426-1927. *Rev. des questions scientif.*, 4e S., 12, 5-16, 1927. ISIS

L'université de Louvain, fondée le 7 septembre 1426 vient de fêter son cinquième centenaire. La *Revue des questions scientifiques* consacre les 180 premières pages de son fasc. de juillet 1927 à célébrer les fastes de l'université. Au discours prononcé par Mgr P. LADEUZE font suite les notices suivantes : P. GILBERT : Les sciences exactes dans l'ancienne université de Louvain (notice écrite en 1884, mais mise à jour par B. LEFEBVRE) ; Dr. TRICOT-ROYER : Coup d'œil sur la faculté de médecine de Louvain ; F. SIMONART : Les mathématiques dans l'université restaurée ; F. KAISIN : La minéralogie et la géologie à l'université de Louvain restaurée, de 1837 à 1927 ; P. DEBAISIEUX : Un siècle de biologie à l'université de Louvain ; C. NÉLIS : Coup d'œil sur l'histoire de la faculté de médecine de la nouvelle université de Louvain ; P. DAUBRESSE : Les écoles spéciales de Louvain et leur influence sur le développement technique de la Belgique et de la colonie. L. G.

London, University of. University College. Centenary addresses. Bound together in one volume. With a preface by R. W. CHAMBERS. London, University of London Press, 1927. ISIS

Reviewed in *Nature*, 121, 271-274, 1928.

(Louvain). L'Université de Louvain à travers cinq siècles : études historiques. Publiées avec une introduction par LÉON VAN DER ESSEN, avec le concours de E. VAN CAUWENBERGH, F. CLAEYS-BOUUAERT, F. CAMERLYNCKX, V. BRANTS, P. LEFÈVRE, H. DE VOCHT, et Vicomte CH. TERLINDEN. 308 p. Brussels, A. LESIGNE, 1927. ISIS

Reviewed in *American Historical Review*, 33, 685-6, 1928.

Mallet, Charles Edward. A history of the University of Oxford. Volume 3. Modern Oxford. London, METHUEN, 1927. ISIS

Volumes 1 and 2, 1924; *Isis*, 7, 583.

Osborn, Henry Fairfield. Creative education in school, college, university and museum : personal observation and expérience of the half-century 1877-1927. XIV + 360 p. New York, SCRIBNER, 1927. ISIS

Scherer, Emil Clemens. Geschichte und Kirchengeschichte an den Deutschen Universitäten. XXX + 522 p. Freiburg i. Br., HERDER, 1927. ISIS

Reviewed by FRANCIS A. CHRISTIE, *American Historical Review*, 33, 390-392, 1928.

56. — BIBLIOGRAPHY (*Methods, Libraries*).

Kuhnert, Ernst. Geschichte der Staats- und Universitätsbibliothek zu Königsberg. Von ihrer Begründung bis zum Jahre 1810. 317 p. Leipzig, O. W. HIERSEMANN, 1926. ISIS

Reviewed by ALFRED SCHULZE, *Deutsche Literaturzeitung*, 1993-1996, 1927.

MacNair, Mary Wilson. A list of American doctoral dissertations printed in 1926. VII + 262 p. (Library of Congress). Washington, United States Government Printing Office, 1928. ISIS

Rye, Reginald Arthur. The student's guide to the libraries of London. With an account of the most important archives and other aids to study. Third edition, revised and enlarged. With forewords by T. FRANKLIN SIBLY and Sir HENRI A. MIERS. XXV + 580 p. London, University of London Press, 1927. ISIS

57. — MUSEOLOGY (*Museums and collections*).

Coleman, Laurence Vail. Manual for small museums. XIV + 395 p., 32 plates. New York, PUTNAM, 1927. ISIS

« This book is intended for the use of those who set about to found museums or to build up small museums now existing. The writing of it has been prompted by observation of the rapid growth of interest in museum-making and the hindrance or defeat of many efforts through lack of information. » 1. Introduction; 2. Organization; 3. Administration; 4. Curatorial Work; 5. Educational Work; 6. Research; 7. Building; 8. Conclusion; 9. Appendices.

Scott, Alexander. The cleaning and restoration of museum exhibits. 3d report. London, H. M. Stationery Office, 1927. ISIS

59. — ERRATA AND ADDENDA, no. 16.

(*For previous errata, see* ISIS, 11,271 f.).

Vol. 4, 220. read A. BENTEKOE, not a BENTEKOE.
Vol. 7, 280. note CAJAL ought to be classified under RAMÓN Y CAJAL, SANT.
Vol. 9, 164. read EVIEUX. E. (not A.)
447. line 4 read IX, 490 (not 487)

491. add to the contributors MICHAEL STEPHANIDES (Athens).
499. note Rome, l. 9 of small text, read 1821 (not 1921).
537. two notes CAJAL ought to be classified under RAMÓN Y CAJAL, SANT.
547, note EISLER, last line. Read *Isis*, 9, 147 (not 8, 583).
553. note Vajirañâna, last l., read BREASTED (not BREASTEAD).

Vol. 10, opp. p. 71, pl. 10. Legends of both figures to be permuted.
123, note SALIBA ought to be classified under XIth century (first half).

SARTON's *Introduction*.

Vol. 1 (a), 691, note Ḥayyuj, l. 9, read Jiqaṭîla.

A few other misprints are not mentioned in these errata because they are too obvious to cause any error or confusion. I wish to express my thankfulness to the readers who take the trouble to make the above-mentioned corrections in their copies of *Isis* and of my *Introduction*. I would advise them, after having accomplished that little task, to write their initials near mine at the bottom of this note, thus to indicate that these and the previous errata have been taken into account. G. S.

These and previous errata have been corrected by.....

The corrections have been made in the card index by.....

(a) From HOMER to OMAR KHAYYAM. XII + 840 p. (Baltimore, WILLIAMS and WILKINS; London, BAILLIÈRE, TINDALL and COX, 1927).

Authors' Index to the Twenty Fourth Bibliography.

The Roman figures refer to centuries; the Arabic figures, to the sections of Parts II and III, which are numbered consecutively from 1 to 59. This index will enable one to find more easily the papers analyzed in the present bibliography, and also to see at a glance what each writer is doing.

May, 31, 1928. DOROTHY WATERMAN.

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